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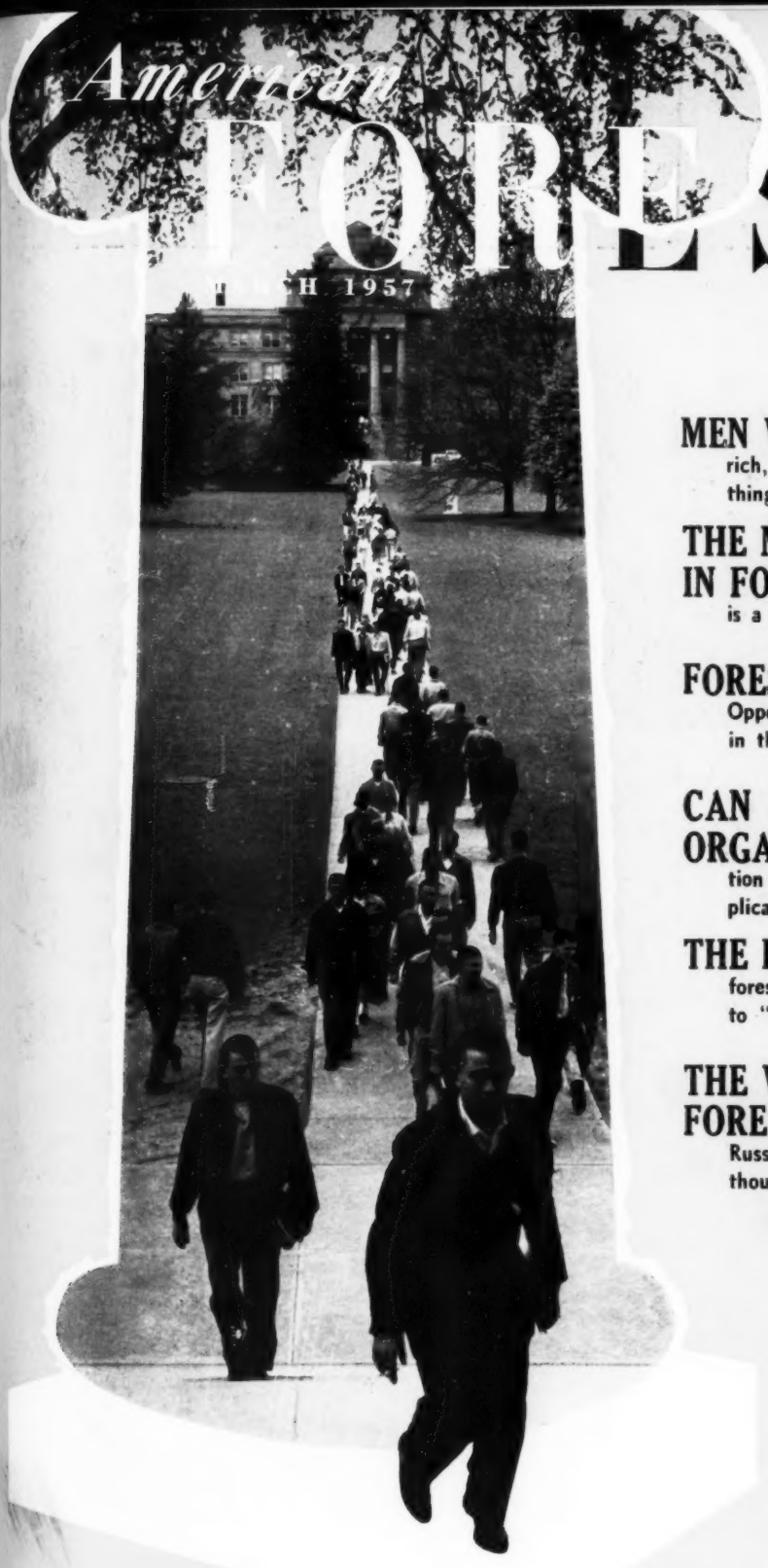

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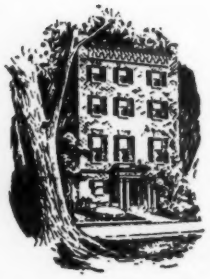

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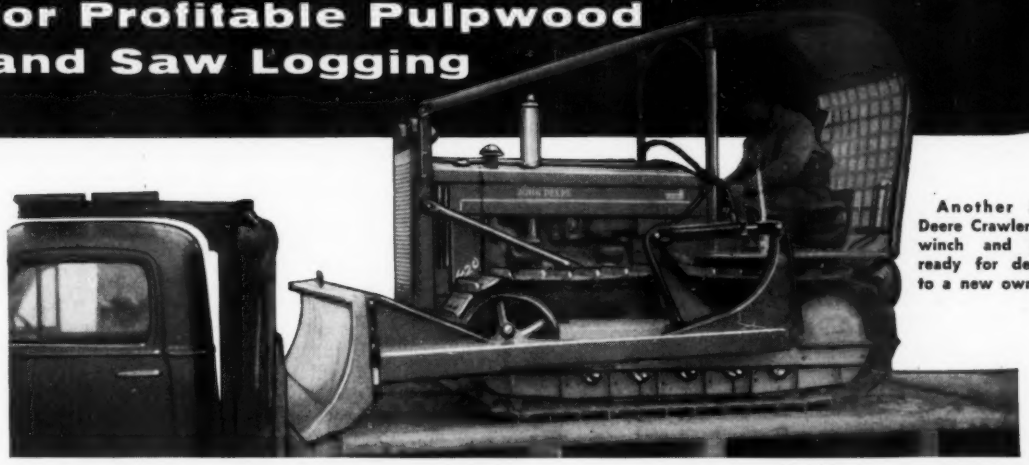

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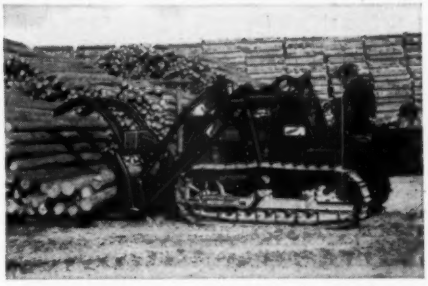

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Forest Forum

Research Report Commended

EDITOR:

Perhaps the report of the Production Research Advisory Committee to the Administrator of Agricultural Research Service resulting from that committee's meeting on December 5-7, 1956, had no relationship whatsoever to our forest landownership project; certain of the recommendations do frame an interesting corollary, however. The following is taken from the report of the committee:

"Evaluation Procedures for Resource Development Proposals. Expand research on evaluation procedures for resource development proposals affecting agricultural lands in order to provide a sound basis for project formulation, selection and cost sharing. Public expenditures for land and water resource development such as large-scale irrigation and flood control, for example, are substantial. The need for sound economic analysis increases with expanding water requirements and growing competition among alternative uses.

"Land Use Shifts and Adjustments in Problem Areas. Expand research to explore potential shifts in major land uses and how they can be accomplished most effectively. Information is needed on prevailing land uses in relation to suitability, the economic feasibility of alternative uses as indicated by comparative costs and returns, and the various means of bringing about and maintaining uses that will stabilize the resource base and the economy of local areas. Four major types of problem areas are involved: the farming-forest margin; the farming-grazing margin; the farming-urban margin; and the farming-special use margin.

"Economic Criteria for Land Classification. Initiate research to determine the economic criteria and procedures for classification of land for various economic uses. This research should endeavor first, to test economic criteria and procedures needed to determine the suitability of the land for alternative uses and second, to set up economic criteria to indicate when shifts in land use are needed. The objectives also would include land classification designed to furnish estimates of the land resources available for the various major uses; to supply a basis for estimates of resource development program benefits; and to provide guides for appraisals in connection with programs such as agricultural credit, tax assessments, and crop insurance.

"Multiple and Competitive Uses of Forest Land. Expand research to develop criteria and illustrate methods for determining the best use or combination of uses of forest land. In some areas the relative returns from timber growing and grazing need to be appraised. For other large areas, particularly in the West, information is needed on the prospective values, both monetary and non-monetary, that may be realized by integrating two or more land uses for water, recreation, wildlife, grazing and commercial timber production. There is need to explore devices such as zoning, land use regulations and other forms of assistance by which state and federal governments may facilitate orderly development of desirable land uses, in which forestry is one of the alternatives."

In general, I feel the Production Economics Committee is to be commended on these matters.

Lloyd E. Partain, Manager
Trade & Industry Relations
The Curtis Publishing Co.
Philadelphia, Pennsylvania

***(Editor's Note*—The committee to which Mr. Partain refers is headed by Dr. Carleton P. Barnes, of A.R.S., who is also executive secretary of the Forestry Research Advisory Committee. Mr. Partain, a member of the Landownership Committee of The American Forestry Association, is also a newly-named regional vice president of the association.)**

Kentucky Man of the Year

EDITOR:

Thank you for publishing my poem "The Snow Lies Patched" in the February *American Forests.* Now, I am going to do something I seldom do—send you two recent press notices of which I am very proud. The first is about the Kentucky Press Association naming me "Kentuckian of the Year"—something I never aspired to or dreamed of ever receiving. Just a short time ago I spent a year in bed, and, one year convalescing.

The second notice is also one I am proud to receive. This is what Russell Lord (author and magazine editor) said about my farm. My father taught us conservation. He couldn't read and write but he knew his soil. We conserved our soil with just a little money, a minimum amount of our own labor and with plenty of horse-sense and know-how.

Jesse Stuart
Riverton, Kentucky.

***(Editor's Note*—Following a near-fatal heart attack, Novelist-Poet Jesse Stuart ("Taps for Private Tussie" and "Man With A Bull-Tongue Plow"), produced his best-selling "The Year of My Rebirth" and is serving as principal of McKell High School. "We ought to do something for youth as we pass by," he explains. "We ought to do something for the world." In making the award that went last year to Governor Chandler, the Kentucky Press Association announced that Mr. Stuart is "Kentucky incarnate." Mr. Lord, following a recent visit to the Stuart farm, pointed out in the *Herald Advertiser* that Mr. Stuart is an "outstanding farmer" as well as an author. "Mr. Stuart has done a most extraordinary job of soil conservation on his 775-acre farm—one of the best I have seen in the country," Mr. Lord said. "Soil conservation agencies are missing a real opportunity in not organizing tours of the Stuart farm. It's a combination of wood and ground cover with virtually no barren soil anywhere." Mr. Lord visited the Stuart farm in gathering material for a book to be published this spring entitled "The Care of the Earth.")**

Price Reporting Urged

EDITOR:

Your "January Washington Lookout" contained the interesting observation that the need for Senator Humphrey's bill on forest products price reporting, "may be more imagined than real."

It is the sincere hope of many small forest owners, who do not have access to the scattered state reports which you mention, that this bill will pass . . . Forestland owners need this information to intelligently market their crop. Many states make no reports at all.

It is good to read that you do not feel that the "AFA" is not being influenced by the vested lumber interests or the Forest Service; both of which are opposed to Senator Humphrey's price reporting bill. If you have the interests of the individual owner of woodland in mind and want to solve his problem, you will support this bill. Why not poll your membership before taking hasty action as you did on the Wilderness Bill?

Mrs. James Pies Sr.
Secretary
Independent Timbermen's Committee.
Spooner, Wisconsin

Low Blow Charged

EDITOR:

On page 50 of the January 1957 issue Mr. Harry C. James notes my alleged "scornful indictment of recreation users of the forests." Since I am one of the more active recreation users of the forest, it is evident that there is a misunderstanding somewhere. The talk to which Mr. James refers was made at a closed (not public) meeting, and I prefaced my remarks with the statement that I was identifying some of the extremist fringes who do all conservation a disservice. A copy of the written portion of my talk was purloined, reproduced without my qualifying statements, and distributed to outdoor clubs. This was done without my knowledge or permission. Scarcely cricket, I think. Any statement can be distorted when reproduced in part, and can be made to "prove" anything. Mr. James and a number of other earnest citizens have been misled.

W. F. McCulloch
Dean, School of Forestry
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Joe Penfold . . . "We should all cooperate on a study . . . . . that in our judgement is of imperative importance . . ."

National Recreation Study

By JOSEPH W. PENFOLD

Director, Izaak Walton League

AFA's Board of Directors last month put its stamp of approval on the Anderson-Aspinall Bill as a nation plans to take a close look at its recreational future

LATE in January legislation (already popularly identified as the Anderson-Aspinall Bill) was introduced in both Houses of Congress to establish an Outdoor Recreation Resources Review Commission to conduct a two year, comprehensive study of the nation's outdoor recreation resources and opportunities. Spiralling population, and steadily mounting numbers of outdoor recreationists in the face of steadily diminishing outdoor opportunities, makes such an analytical study imperative.

Senator Clinton P. Anderson of New Mexico, introducing the legislation, S.846, said: "We Americans are fond of hunting, fishing, camping and all the other sporting activities connected with outdoor life. This is a fine tradition, and we want to preserve and foster it. Our outdoor resources will be as important and desirable to our country's future generations as they are to us.

"I believe we have a duty to protect and preserve America's outdoor recreation heritage and opportunities. We cannot accomplish this by leaving it to chance or by taking our resources for granted. Outdoor recreation resources, like any other natural resource, can be protected and developed only by sound planning, intelligently based upon the fullest understanding of all pertinent facts and requirements.

"In brief, our nation is confronted with a two-fold situation. First, outdoor recreation activity is increasing at an accelerated pace. This has been caused by increases in population, more leisure time, and better modes of transportation. . . .

"We are happy to see this increase in activities, but this brings us to the problem at hand. The space and resources upon which outdoor recreation depends are diminishing. The growth of our cities, highways, and industry have taken their separate tolls. More intensive utilization of all other products and resources of our lands and waters has made its force felt also. Of course, we do not propose that such elements of progress be slowed. However, we do suggest that the solution to the problem of greater outdoor recreation demands and diminishing resources requires that we plan wisely to obtain the fullest utilization of our resources for the future."

The statistics of outdoor recreation have become almost commonplace: 50 million visits a year to the national forests, as many to the national parks and monuments, 183 million visits to state parks. There are in excess of 25 million licensed hunters and fishermen plus more millions of freckle-nosed youngsters who can go afield unlicensed. Hunting and fishing, according to the Prossley Survey, produces an annual business in excess of $3 billion. Pleasure boating enlists the enthusiasm of over 20 million people and supports a boat and accessory industry worth more than a billion a year.

Startling as these figures are and they apply comparably to all other

(*Turn to page* 51)

By ALBERT G. HALL

RECORD APPROPRIATIONS REQUESTS FOR FORESTRY ACTIVITIES are in keeping with the trend in the greatest peace-time budget in the country's history. The accompanying table shows a breakdown of the amounts recommended by the President, and on which the Appropriations Committee of the House is now at work. While much has been said about Congressional action to reduce the spending proposals by from $2 billion to $5 billion, it is not expected that any appreciable reduction will be made in the forestry items. Principal increase requested is that of the U.S. Forest Service for nearly $8 million more for "recreation and public use." This is in response to continued efforts over the past several years by recreational groups to have Forest Service receipts "earmarked" for recreational and wildlife developments, and is an indication that the Administration plans to move ahead with "Operation Outdoors." The principal revenue-producer among Forest Service activities—timber sales administration and management— is scheduled for an increase of a little more than $2.5 million.

FORESTRY ASSISTANCE TO INDIVIDUAL LANDOWNERS under cooperative work with the states has been recommended for an increase from $1 to $1.5 million. Not shown in the tabulation are funds to be transferred from other agencies to the Forest Service: $918,186 for watershed protection and $1,603,500 for flood prevention, both from the Soil Conservation Service; and $6.5 million from the Soil Bank Program. The latter is $4 million less than was transferred last year, but the reduction is offset by a direct request for $4 million for assistance to the states in tree planting—a function supplementary to the Soil Bank, but not directly part of it. Authority for the request is Section 401 of the Agricultural Act of 1956 which provides for federal assistance to the states in reforestation programs approved by the Secretary of Agriculture. The new function overlaps the planting activity authorized by the Clarke-McNary Act, for which $1.3 million is requested.

PRINCIPAL INCREASES REQUESTED BY THE INTERIOR DEPARTMENT are those for improving timber management and timber access of lands under the administration of the Bureau of Land Management and the Bureau of Indian Affairs.

PRICE REPORTING OF FOREST PRODUCTS, proposed by Senator Humphrey of Minnesota last year, just barely missed being part of the Agricultural Act of 1956. Included in the Senate version of the act, it was twice eliminated by the Senate-House Conferees. Several bills have been introduced in this session to authorize and direct the Secretary of Agriculture to set up a price-reporting system for stumpage, logs, pulpwood and similar forest products produced by farmers and other small owners. Senator Humphrey again is spearheading the drive for passage of the measure, and has indicated that he will put up a vigorous fight for it. When the measure failed of passage last year, Senator Ellender, chairman of the Senate Committee on Agriculture and Forestry, indicated that he would help see it through the Senate again this session. Opposition to the bill has been strong. The major objection is based on a question of the need for such service since many state, local and industry sources are providing forest products pricing information locally where it is most meaningful. It is felt that a nation-wide reporting system at best can be just a statistical exercise because of the many variable factors which affect the price of forest products. It is feared, also, that federal reporting will eventually lead to parity determinations and a price support program. The first Humphrey Bill suggested such a natural outgrowth of the activity

FORESTRY IN THE FEDERAL BUDGET

Fiscal Year Ending June 30, 1958

U. S. FOREST SERVICE	1957 Estimated	1958 Budget
Forest Protection and Utilization		
Timber sales administration and management	$ 10,145,000	$ 12,780,000
Reforestation and stand improvement	1,850,000	2,185,000
Recreation and public use	3,700,000	11,500,000
Wildlife habitat management	385,000	510,000
Range management	1,400,000	1,570,000
Range revegetation	1,000,000	1,190,000
Range improvements	1,235,000	1,300,000
Soil and water management	640,000	810,000
Mineral claims, leases, etc.	1,680,000	3,280,000
District ranger activities	6,400,000	7,050,000
Land utilization projects	1,050,000	1,190,000
Protection—fire	10,500,000	11,300,000
Structural improvements	4,860,750	8,209,600
Fighting Forest Fires	5,250,000[a]	5,250,000
Insect and Disease Control	5,120,000	5,205,000[b]
Land Acquisition		
Under Weeks Act	100,000	100,400
Cache National Forest	50,000	50,000
Superior National Forest	500,000	500,000
Under special acts	10,000	10,000
Research		
Forest and range management	5,068,734	5,420,000
Fire control	325,562	391,500
Insect	771,499	805,900
Disease	614,161	692,600
Forest Products Laboratory	1,434,828	1,652,500
Products—experiment stations	514,155	562,500
Forest survey	1,049,374	1,406,300
Economic	376,787	393,700
Roads and Trails—construction and maintenance	24,000,000	24,336,000[c]
Indefinite Appropriations	45,151,200	47,287,400[d]
State and Private Forestry		
Forest fire control	10,025,000	10,043,000
Tree planting	1,000,000	1,308,000
Forest management and processing	1,000,000	1,510,000
General forestry assistance	165,000	384,000
Assistance to States—Tree Planting	.....	4,000,000[e]
TOTAL U. S. FOREST SERVICE	$147,371,950	$174,183,400
DEPARTMENT OF THE INTERIOR		
Bureau of Land Management:		
Management of Lands and Resources		
Forestry	3,981,000	5,374,700
Soil and moisture conservation	3,301,400	4,046,700
Fire suppression	210,000	400,000
General administration	1,212,800	1,354,900
Cadastral surveys	1,653,900	2,088,200
Other	8,000,200	8,955,500
O & C access roads; buildings; recreation	4,600,000	6,500,000[f]
Range improvements	390,871	620,000[g]
TOTAL BUREAU OF LAND MANAGEMENT	$ 23,360,171	$ 29,340,000
Bureau of Indian Affairs (Forestry and related items only)		
Forest and range management	2,680,000	2,883,000
Fire suppression	140,000	140,000
Road construction and maintenance	11,500,000	12,000,000
National Park Service (Forestry and related items only)		
Forestry and fire control	765,045	942,140
Road maintenance and rehabilitation	4,503,900	5,013,000
TENNESSEE VALLEY AUTHORITY		
Watershed protection and improvement only	1,247,000	1,060,000[h]

[a] To be increased by a supplemental request for an additional $6,500,000.
[b] $2,780,000 for white pine blister rust; $2,425,000 for other pest control.
[c] In addition about $11,848,000 will be available from road and trail fund.
[d] Includes school fund payments, slash disposal refunds, payments to states, etc.
[e] Agriculture Act of 1956—subsidies to states for tree planting.
[f] Includes $350,000 for buildings; $100,000 for recreational facilities in Alaska; does not include $800,000 unobligated balance brought forward.
[g] From grazing receipts.
[h] About equally divided between forestry and tributary watershed projects.

Editorial

Men Wanted

The boys who served in World War II, Korea and who are doing their hitches to help keep the peace are pretty O.K. in our book. Sure, some of them are having to make adjustments upon their return to civilian life, but by and large this has been the most level-headed returning army in our history. Certainly, this isn't any lost generation. These men know what they want. They want educations, jobs, homes and a measure of security.

But is that all? Of course, it isn't. While most of these men have shown a commendable ability to put first things first, they are far from "materialistic" as some have charged. For one thing, they are surprising everybody by rearing some of the largest families since the days of Teddy Roosevelt—and right in the teeth of the atomic peril. In short, the family appears to be coming back in America as the hub of activity and with it a broadening of concepts and values. Chief R. E. McArdle of the Forest Service may have shrewdly put his finger on what actually makes this oncoming generation tick when he recently observed that deep down most of these young people have an intense desire to "do something worthwhile."

Well, with our population now at a new peak of 170 million and still climbing, there is much for these people to do that is both worthwhile and rewarding in the management of renewable natural resources. Forestry wants more of these men. So do our friends in the field of wildlife management and related areas of professional endeavor. Fortunately for forestry, the dip in the forest school enrollment curve now appears to have been checked and is once again headed in the right direction. Even so, there will probably be a greater demand for foresters than we can supply in the next 10 years according to Dean Hardy L. Shirley, of Syracuse.

Accordingly, this issue of *American Forests* is dedicated to all the young men in America who want to do something "worthwhile." Recent hikes in starting salaries ($4200 a year and up) now compare favorably with starting scales in other professions. Is there a chance to advance and grow? Listen to what forester employers all over the country have to say about that on pages 18 and 19 of this issue.

And the answer is "yes"—both in public and private forestry. The general refrain from coast to coast is "give us men who can grow" with our companies, with our agencies. Give us men who are social minded and who can work with people. Give us men with heart and courage who are big enough to advance with this big country of ours.

That is what employers want. They know that in a very real sense, the whole future of the country may well depend on how our foresters for the future acquit themselves. The stakes are great and the challenge big. Our bet is that the young men of America will meet it head on.

Will Price Reporting Work?

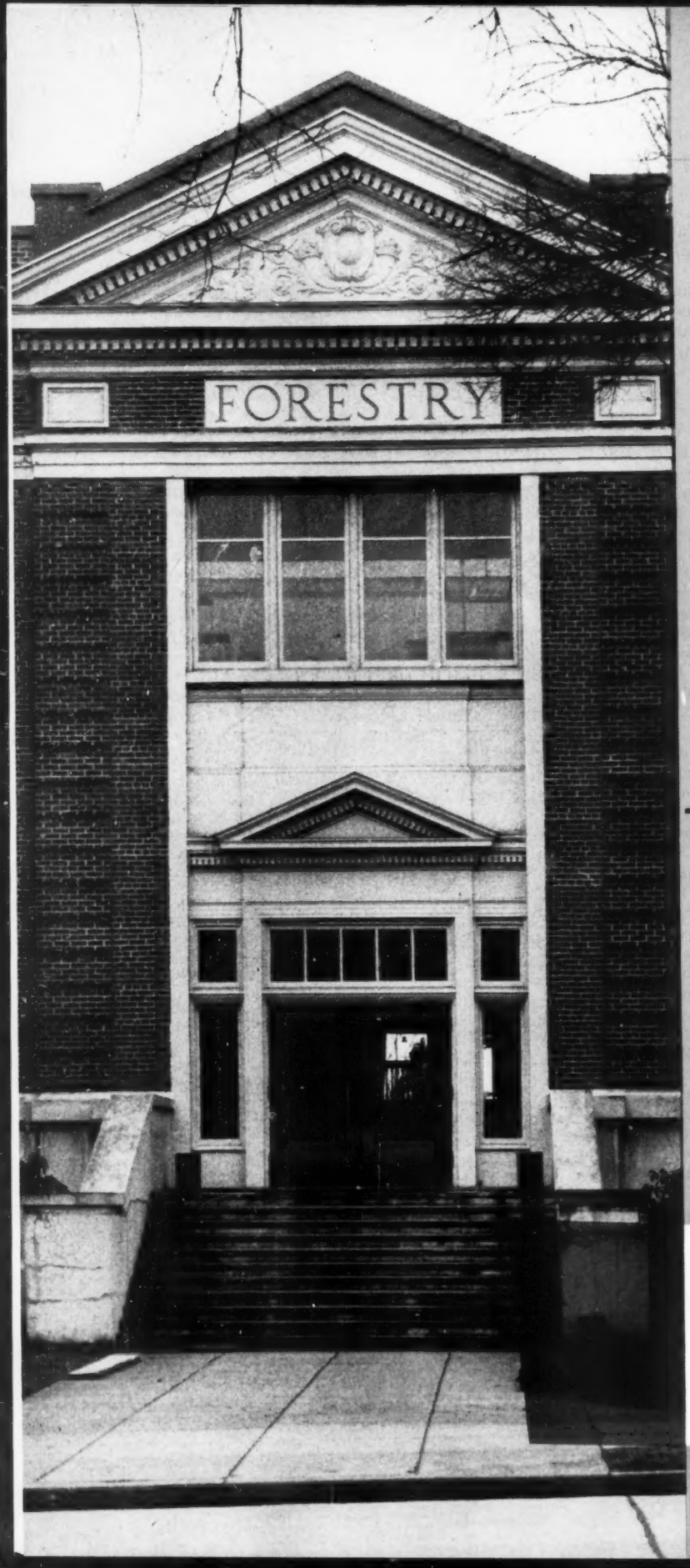
Members of the Washington section of the Society of American Foresters were pleased last month when a United States Senator—Hubert Humphrey, of Minnesota—took time out from a busy schedule to address them on the topic of forest policy. As a "citizen, politician and legislator," Senator Humphrey said it was his job to know a little bit about everything but that on specific problems, such as those affecting resource management, he had to be guided to some extent at least by experts in the various fields. As is generally true in such cases, *American Forests* found itself heartily agreeing with the Senator on those matters where his views coincided with or had been guided by AFA policy, and heartily disagreeing with him where they did not.

The Senator said some good things at the society meeting. He is dead right when he states that people do not associate forest fires with renewable resources and that every time we have a major fire we ought to "scare the daylights out of them." He is also dead right when he attacks the Scrooge-like attitude of our legislative bodies, both state and federal, as regards appropriations for fire control. As he said, "they'll shell out for flood control but take another look at an appropriation for fire control." And in this connection, the Senator could help start reversing this trend by calling for an additional $500,000 in the new forest budget for fire research as recommended by AFA.

However, AFA believes the Senator is dead wrong in pressing for a uniform price-reporting system for wood products when that product itself is far from uniform. This has nothing to do with preventing "the little farmer from knowing what is going on." It does have to do with such matters as tree and log grades (research is just beginning to develop such systems), species, quality, amounts of timber available on specific locations, location with respect to markets, competition, and the logging chance. These are some of the problems that must be overcome—made uniform in other words—before a really workable system can be devised—all of which has already been discovered by the Department of Agriculture in trying out cooperative reporting systems in four different states.

Nobody, we are convinced, is trying to "gouge" anyone on this. We simply are not as yet convinced that such a system is workable. But here again, we say let's open up the book and let people decide for themselves. We will be happy to publish any article taking the affirmative on the subject "Will Forest Products Price Reporting Work?" by Senator Humphrey or anyone prepared to correctly reflect his views on the subject. At the same time we will be glad to publish another article on the opposite side, and present them both back to back.

Let's give the folks the facts.



About the Author

O. F. Hall is an associate professor of forest management at the School of Forestry of the University of Minnesota. He has been on the staff since 1948 teaching courses in forest management, forest policy, logging, conservation of natural resources, forest economics, and research methods. His principal research has been on the economics of thinning and on the use of weight for the measurement of pulpwood for purchase. Degrees have been received from Oberlin College (A.B.—1943), Yale University (M.F.—1948), and the University of Minnesota (Ph.D.—1954). During World War II he served three years of active duty with the Air Force in the Pacific Theater. He was born and raised in Oberlin, Ohio.

IS forestry being squeezed out in the battle for brains? Are America's forests sufficiently important to command the attention of our best men? When will the supply of foresters catch up with the demand? What kind of action does the current shortage call for?

Questions like these are causing special meetings and program reappraisals by employers of foresters and by forestry school leaders. The American Forestry Association has received dozens of letters describing the situation and asking what can be done about it. The questions should concern every person interested in the condition and productivity of this country's forest resources.

MANPOWER

By OTIS F. HALL

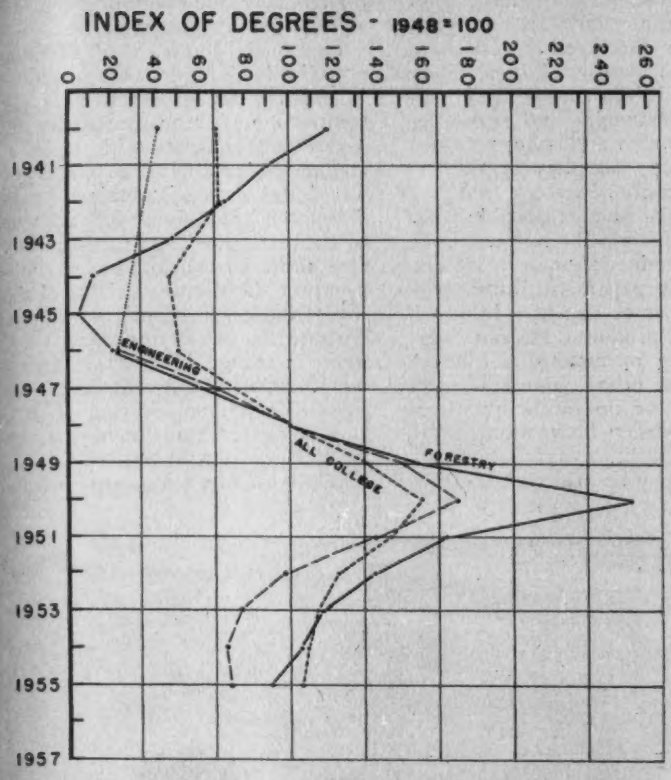


Figure 1

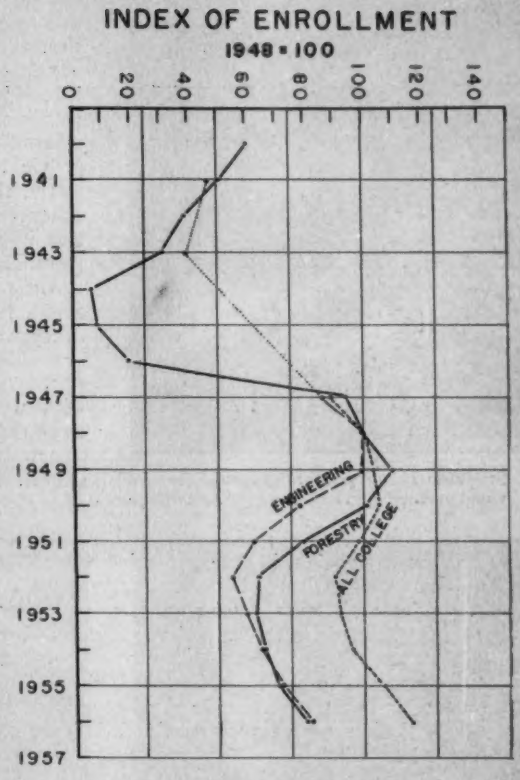


Figure 2

This article is an effort to summarize the situation briefly. Some indications are given of the magnitude of the current shortage of foresters. The factors causing the shortage, including salary levels, are mentioned. And finally some of the methods suggested for improving the situation are examined, since they may interest young men choosing a career, employers seeking foresters, and forestry educators.

How great is the shortage?

No complete and detailed survey of the number of unfilled openings has been attempted—indeed one would be very difficult. However, examples of specific shortages can be given, and it is known that forestry employment is expanding rapidly. The number of professional foresters at work in the U. S. has been estimated at about 17,000; half of these received their degrees since World War II.

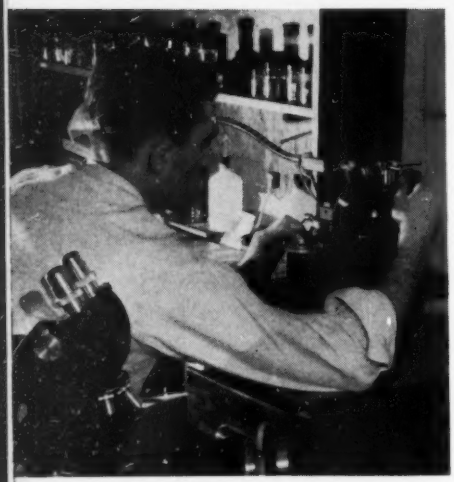
To cite a few examples of manpower shortages, last September the U. S. Forest Service could not find trained foresters for 130 vacancies. Normal recruitment for the Forest Service is estimated to be 250 to 300 graduate foresters *per year* for the next decade. Several southern pulp and paper companies who presently employ 385 foresters report unfilled openings for 38 trained men. Some state forestry organizations are as much as one-fourth below the strength for which funds have been appropriated. Forestry schools throughout the country report they could place two to four times as many graduates as they have, not only in forest management work but also in wood products and associated lines of work. About 150 additional foresters will be required in the next year if the forestry phase of the Soil Bank program is to be effective. These are a few indications of the extent of the shortage.

What do foresters do?

Without realizing that the forestry graduate has much wider and more diverse employment opportu-

R SHORTAGE IN FORESTRY

Forestry needs its share of men with ability, but compared to other industries few parallel efforts are being made to attract ambitious and capable young men



Student taking photomicrograph in the wood technology lab, Iowa State College

nities than the public recognizes, no one can understand the current shortage or intelligently formulate action to alleviate it. A great many foresters have the commonly visualized job of managing and protecting a forest property and trying to make it yield large supplies of timber, water, recreation, livestock feed and other benefits at a reasonable cost. But in addition a forester can be a technical production man in a plant turning out paper, furniture, plywood, lumber or one of a hundred other wood products. He can engineer logging operations, sell wood products or other materials used with wood, or do public relations work. Many carry heavy administrative responsibilities or supervise research. It may be said that there is highly educated personnel in all fields, including forestry.

Figure 1 shows this situation graphically. The data are presented in relative terms to facilitate the comparison of trends in forestry undergraduate degrees with those in engineering and in all U. S. colleges. The index shown is obtained by dividing the actual figure for each year by the corresponding figure for 1948. One must be cautious not to misinterpret the relative heights of the curves in such a graph, but to concentrate on the trends shown. For those interested in absolute figures the 1948 data are as follows: all colleges—272,311, engineering—27,460, forestry—918. Unfortunately, figures for 1956 are not yet available.

While the first graph is most helpful in explaining the current situation, Figure 2 on total undergraduate enrollment is more suggestive of future developments. The relative scale of index numbers is again used. Here the upswing in potential graduates can be seen. Freshman enrollments began to increase again in nineteen fifty-two for engineering and for forestry in 1953, and these increases will soon result in increased numbers of graduates.

Forestry is making progress — But this is what we are up against →

Experiment in soil research being conducted by student at Duke University

a place in forestry for a person with almost any interest or aptitude.

What's happening to enrollment?

If one is to correctly assess the current situation, he must understand the trend in numbers of college graduations since World War II. After the surge of veteran students had passed, the number of graduates per year declined sharply, in forestry as well as engineering and all collegiate training. The decline was made steeper as the below-normal birth rate of the depression years showed its influence at the college diploma level. This period of decreasing numbers of college graduates, coinciding with a period of unparalleled economic activity and expanding horizons for technical progress, created the present extreme shortage of

Is forestry keeping up?

Complacency can easily result from seeing the trend shown in the second graph. One can conclude that the additional numbers of students now in school will eventually fill the vacancies. Closer inspection of the trends and a familiarity with current student recruitment practices raises

(*Turn to page* 46)

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Gas turbine auxiliary pneumatic and electric power units.
Electronic air data computers, pressure ratio
various types of missiles.
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analysis involving
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THURSDAY, NOVEMBER 15
FOR YOUR BOY
Have you thought of a Career in Steel?
GRADUATING ENGINEERS
ENGINEERING STUDENTS
WE CAN'T PROMISE YOU THE WORLD...
ENGINEERS
BOEING
AIRPLANE COMPANY
WILL CONDUCT PERSONAL INTERVIEWS ON CAMPUS
NOVEMBER 21
John Nettleton wants to know:
How would a graduate degree affect my chances for advancement at Du Pont?
Bob Birch answers
ENGINEERS

Snow-capped Mt. Rainier lies to South of the campus at Univ. of Washington

FORESTRY AS A CAREER

By ARTHUR B. MEYER

The opportunities in forestry range from complex technical work to administrative responsibility

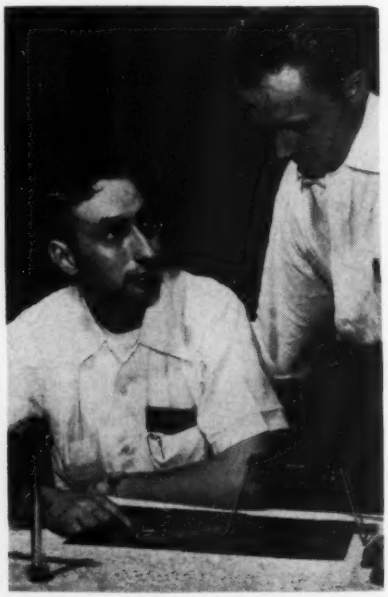
TODAY'S professionally trained forester is a scientist and technician who is playing an important role in modern society. This does not mean that there is no truth at all in the popular concept of him as a somewhat adventurous (and to many people perhaps, a slightly romantic) fellow who spends much of his life in the great open spaces.

Forestry does deserve note of its special attractions, just as do other careers that a young man may consider, and the original feature that attracts most foresters to their life's work is a real interest in and liking for the out of doors. This interest they retain; but with training, experience, and maturity it broadens into an understanding of the complex relationship of human society and the natural resources upon which it is founded. It is then that the forester reaches his true stature as one who works with both men and trees. But the interest that leads into work in forestry must get its start and that start is usually with a liking for the out of doors and working with living things.

If you ask a forester to give an exact definition of forestry he will say that it is "the scientific management of forests and forest lands for the continuous production of goods and services." Goods are the countless items that come from wood, from construction timbers to pulp for paper and plastics, as well as forage for livestock and crops of wildlife. Services are things that forests do not

This article is adapted from a bulletin published by the Society of American Foresters, and is available for 25 cents.

Yale forestry students measure taper of white pine for tree-volume studies



Student at University of Minnesota is preparing map from aerial photographs

View of the quadrangle on the campus of University of Washington, Seattle

The students gather on campus between classes at University of Maine, Orono

Campus of Duke University was built in the shape of a cross

exactly grow but which come about because the forests and forest lands are there. Probably the most important service of forests is the effect they have on our water supplies. They protect the watersheds of streams and rivers, help keep the water pure, and serve to stabilize the supplies from both surface and underground sources. Forests and forest lands also furnish a place where people by the millions may enjoy outdoor recreation, where scientists may study nature in the wild, and where those who appreciate natural beauty may go for inspiration and solitude. Indeed, it would be almost impossible to point out all the ways in which the presence of forests and the forest crops which they grow serve to make this a stronger, wealthier, and healthier country.

A forester is the individual who is trained to carry on the "scientific management" so that the forests continue to produce the things we need. He knows about trees and soils, and something about wildlife and watersheds and the recreational uses of forests. He knows how to survey land, and build roads, and harvest sawlogs and pulpwood. He is trained in cutting forest products in such a manner that the forest renews itself and grows even more products than it would if it were wild and unmanaged. He knows something of the economics of the forest industries. He is skilled in fighting fires and in stopping the damage that comes from insects and diseases in the forest. In addition to these and other technical matters, the forester also works continually with people. He supervises timber harvesting crews and fire fighters and directs organizations in government agencies and industrial concerns. He works with the general public in the protection of forests from abuse and in bringing about an appreciation of the necessity for the wise use and conservation of all renewable natural resources.

Oregon State students on field trip at Pringle Falls Experimental forest

Although forestry is concerned basically with land and resource management, individual foresters engage in fields of work which may vary from scientific research through business administration, teaching, and public relations. Foresters may be employed by federal and state agencies, by universities, by pulp and paper companies, by lumber companies, by industrial and citizens' organizations. They may work for themselves as consultants. They may work in fields closely allied with forestry such as soil conservation, wildlife management, arboriculture, certain phases of engineering, wood technology, and the manufacture and sale of wood products.

Employment of Foresters

During the past twenty years, particularly since World War II, there has been tremendous expansion in the practice of forestry by industrial and private owners of timberland. This has brought a considerable change in the employment of foresters and greatly increased their opportunities. Prior to this period most foresters worked for federal and state agencies, mainly the Forest Service in the U. S. Department of Agriculture. Now nearly half of all foresters in the country are in private and industrial work and a large percent of the current graduates of forestry schools are entering this field. The approximate number of foresters by various fields of employment is given in Table 1.

Types of Work and Salaries

There is wide variety in the kinds of jobs that individual foresters perform both between various fields of employment and within those fields. Each in its

TABLE 1.—ESTIMATED EMPLOYMENT OF FORESTERS IN THE UNITED STATES IN 1956

1. Public		
a. Federal, all agencies	5,000	
b. State, all agencies	1,800	
c. County and municipal	250	
		7,050
2. Education, including agricultural extension and institutional research		750
3. Private, including industrial		7,400
4. Unclassified, including allied fields		1,800
Total		17,000

1a. Includes foresters in overseas assignments, defense agencies, and miscellaneous federal resource activities.
1b. Includes state highway, game, taxation and park agencies as well as forestry departments.
1c. Includes recreation and shade-tree work.
2. Includes teaching in high schools, junior colleges, and education in general conservation as well as professional forestry schools.
3. Includes about 1,250 self-employed, consulting foresters, and managers of nonindustrial-owned woodlands.
4. Includes foresters working in wildlife and range management, arboriculture, engineering, erosion control, manufacture and sale of forest products, and in research in those fields not otherwise classified above.

way contributes to better protection, management, and use of forest resources.

Public Forestry

Federal service.—As the oldest field of employment for foresters, federal service is the one best understood by the public. The Forest Service, U. S. Department of Agriculture, accounts for most federal positions, although a number of foresters are found in agencies of the Department of the Interior and a limited number in other branches of the federal government.

In order to enter the U. S. Forest Service an applicant must successfully pass the federal service entrance examination of the U. S. Civil Service Commission. In order to be eligible to take this examination, he must possess a college degree in forestry, or other degree with a stipulated amount of forestry courses.

The young forester, having received his civil service appointment, would most likely be assigned to a ranger district (administrative unit) of one of the country's 153 national forests. There under the supervision of the district ranger he would be engaged in many activities including cruising (inventorying) timber, surveying boundary lines, fighting fires or epidemics of insects or diseases, planting trees, marking (selecting) timber for sale to wood-using industries, carrying on range forage surveys or improvements. He would find himself concerned with supervising the work of subprofessional employees such as fire lookouts and fire fighters, and dealing with public users of the forest, whether campers, tourists, ranchers and farmers, or timber cutters. Other beginning foresters are assigned to research work by a forest and range experiment station.

After one or more years of experience the young federal forester would be given more responsibility and would have the opportunity to specialize in types of work for which he felt himself best suited. Those with particular scientific or scholarly interests might find their life's work in forest research. Federal employment has the permanence of career civil service work, liberal vacation and sick leave allowance, insurance and retirement benefits.

Salaries in the U. S. Forest Service start at $4210 for the civil service entrance grade of GS-5 for the forester and forester (range) classifications. Forest rangers in charge of a ranger district on a national forest annually earn from $5440 to $7465. The position of supervisor of a national forest pays from $7570 to $10,065. A regional forester, who administers a number of national forests as well as cooperative activities with states and private landowners, receives from $11,610 to $12,690 per year. A few positions in the service have higher salaries up to and including the chief of the service, whose salary is $17,500.

Assistants and specialists in the federal service are attached to the various administrative levels—in individual forest supervisors' offices, in the regional foresters' offices, at the national headquarters in Washington, D. C. Salaries in these positions vary according to responsibilities and length of service.

Foresters engaged in research work in the federal forest and range experiment stations and the Forest Products Laboratory have comparable salaries to those in administrative positions in the Forest Service.

Salaries in other federal bureaus and agencies such as the Bureau of Land Management or the Soil Conservation Service are comparable to those in the Forest Service for all federal positions classified under civil service.

State service.—There is considerable similarity between the work in federal and in state service, although various states have widely differing organizations. One major difference is that, although many states have extensive areas of state-owned forests, a large part of state forestry programs is generally concerned with aiding and assisting private owners of timberland. Almost always the fire control organization in a privately owned forest area is operated by the state service and fire control is usually a state's largest activity in forestry.

A student checks progress of experiments at Pennsylvania State College

Other activities include protecting and managing state-owned forests, furnishing forest management and marketing assistance to private owners, the production and distribution of seedling trees, the administration of forest tax laws, educational and public relations work, and similar programs which vary in emphasis from state to state.

The forestry profession has long striven for a merit basis of employment in all public work. Most states subscribe to this policy, and state service is an interesting and productive field for the forester.

The applicant to a state forestry agency may be required to pass a competitive examination or may gain entrance through personal interviews and a study of his college and past employment records. Beginning foresters, as in federal employ, usually find a large variety of jobs and an opportunity to work under the direction of more experienced men for a training period.

It should be mentioned that some of the major programs of state forestry agencies, in fire control, timber management and marketing assistance, and the production of planting stock, are cooperative programs in which the federal government participates through the U. S. Forest Service.

Entering salaries in state work range from about $3600 to $4500 annually, but may vary considerably. A forester in charge of a fire protection district or a unit of state-owned forest may receive from $4000 to $6000 per year. The salary of a state forester (head of the department or agency) depends on the size of the state program. It is usually between $6000 and $12,000.

Reimbursement other than salaries in state work varies widely. Some state forestry organizations do and some do not furnish housing, personal transportation, insurance and retirement benefits.

County and municipal forestry.—Work for the smaller units of government might consist of the management of a forested area which is the watershed of a city's water supply. It might be concerned with forest management practices similar to those of federal and state forest properties—on a county or city forest. It might be primarily involved with forest-park and recreational development and administration. Municipal foresters often have duties involving a knowledge of arboriculture and shade tree work. Salaries vary widely in this field.

Education and Extension Work

Extension work is the specialized field of group educational activities carried on with the general public, especially in agricultural areas. Extension foresters are usually attached to the state college of agriculture. A large amount of travel is required. Ability in public speaking, writing, and a knack for working with people singly or in large groups is essential.

Foresters in the field of education may teach professional subjects in a college of forestry; courses in forestry in an agricultural or other college; or general conservation in schools or colleges offering such subjects for the non-professional student.

Teachers in professional forestry schools usually engage to some extent in research work in addition to their teaching and occasionally staff members are concerned solely with research. Advanced study is essential to a successful career in teaching, and a doctor's degree is highly desirable. Men fitted for the teaching profession find in it many rewards.

Salaries in teaching and research in a college or university depend upon the institution and the position held. In the 26 accredited (see Table 2) schools of forestry the salary range is from $3000 for beginning instructors to $5000 to $12,000 for professors. Heads of departments or schools make from $6500 to $14,000 per year.

Private and Industrial Forestry

There are more foresters working for industrial and private owners of timberland than there are in any other employment category. The nature of their work covers almost every conceivable phase of technical forestry, the business aspects of growing, harvesting, and marketing the products of forests, and related duties.

The major industrial employers of foresters are the pulp and paper companies, and logging, lumbering, and milling companies. Others include merchandisers of wood products, various types of forest products industries, a few transportation and communications companies, distributors of nursery stock, and tree expert or arboriculture companies.

An industrial forester might begin his career with a lumber or pulp and paper company as a timber estimator and eventually become a vice president of the company in charge of land management or of production. The principal limitations on an individual's possibilities

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Microscopes assist students in wood identification, University of Michigan

Students conducting research in forest soils lab at Yale School of Forestry

WHAT EMPLOYERS WANT . . .

"CAN HE GROW WITH OUR ORGANIZATION?"

To assist young men considering a career in forestry leaders in government and private industry outlined qualifications necessary for success in this field

WHAT qualities and attributes are forestry employers looking for today in young men preparing themselves for forestry as a career?" This is a question a number of young men have addressed to AMERICAN FORESTS *in recent months.* AMERICAN FORESTS *decided to find the answers. Employers showed immediate interest in the question. One executive in the woods industries said, "We are interested in this for two reasons: 1) to help capable young men point in the right direction; 2) to find out what other employers or employer representatives have to say about it."*

Here are some of the typical replies:

E. W. Tinker, Executive Secretary, American Paper and Pulp Association—"Forestry today has come of age. No longer is a career in forestry confined to those young men who have visions of an outdoor life of hunting, fishing, and riding a horse through the great open spaces.

"Close to two-thirds of the men graduating from forestry schools now find ready employment in the woods using industries in a wide range of positions from timber management, land purchasing, logging, research, wood procurement, marketing, conservation education and timber accounting. The young man seeking an education in forestry should understand that the forest resource he will manage is an important, in fact, an essential part of one of America's greatest industries. Executives in the pulp and paper industry are looking for graduates from forestry schools *who can grow in stature with their company.* They are looking for men who, as they mature, are capable of moving up in the company to managerial positions. These men must have the training, ability and vision to manage a resource upon which this fifth largest industry in America is dependent for its existence and to grow in their company so they may one day be fitted for the top executive positions.

"There are many examples now of vice presidents, presidents and board chairmen in the pulp and paper industry who began their careers as timber markers, surveyors and loggers."

Bernard A. Anderson, Chief, Division of Personnel Management, Forest Service—"The Forest Service needs young professional foresters who have had good academic training — training which at least equals the minimum Civil Service requirements for the entrance grades (GS-5, $4210 per annum; GS-7, $4930 for those with masters' degrees). There is need, too, for engineers, business administration graduates, and research scientists in forestry.

"For a fully satisfying career in the service, these young professional men must know how and be willing to work

on field assignments. They must be able to 'join the team,' and work with people. They must have a desire to qualify themselves for advancement to more responsible and difficult jobs by profiting from training and experience, membership and participation in appropriate professional societies, and a continuing self improvement effort.

"Forestry career opportunities in the Forest Service cover as broad a field as the profession of forestry itself. Similar opportunities exist in engineering, business administration, and in professional fields related to forestry such as entomology, forest products utilization, economics, hydrology, soils, statistics, pathology, range management, wildlife management and forest recreation."

D. Y. Lenhart, General Manager, Woodlands Department, West Virginia Pulp and Paper Company — "In order that the company can be assured of a continuing high level of managerial competence, it is necessary to bring young men into the company each year who are promotional material. Accordingly the attributes which indicate that a man *can grow and develop from a technical specialist into a managerial generalist is given considerable weight.*

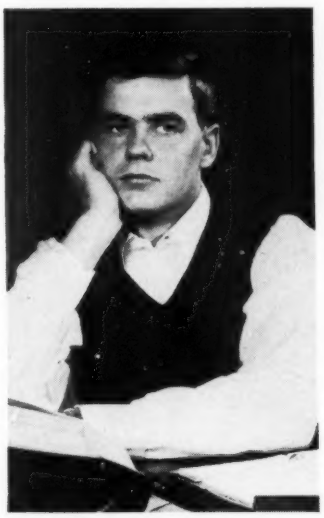
"The mastering of his technical specialty which in this case is forestry is usually indicated by his academic standing. His genuine interest in his specialty is usually indicated by the summer employment he has chosen during his college career. The ability to get along with others (colleagues, superiors and subordinates), to take responsibility and to apply himself conscientiously is important. A good rating in these factors is essential to qualify as a technical specialist which is the entering point of most men into the business world.

"In order for a man to grow and to develop into the managerial levels of the company, he must have interests beyond his technical specialty and the ability to think in broader terms than just forestry. While a liberal arts education is advantageous, it is not necessary. An interest in society as a whole, a broad interest in many phases of business, the willingness to gain a working knowledge and an appreciation of other specialties is essential for managerial development. Emotional maturity, tactfulness, adaptability, aggressiveness, self-confidence and initiative are also observed as well as appearance, manner, speech and health. These factors must be judged good to excellent in the men we are seeking to add to our staff."

D. A. Williams, Administrator, Soil Conservation Service—"We like the forestry graduates we hire to come from accredited schools with a major in forestry management. Since one of our major activities is working daily with farmers and ranchers, we like recruits who enjoy working closely with rural people. For our needs, it is desirable for the employee to have had some farm experience. At least, he should be interested in farm problems.

"We like men who are energetic, resourceful and have self confidence or the ability to develop it. We expect the employee to be enthusiastic about his professional field. We want him to be equally eager to learn the important relationships between it and other allied fields of study so that he could develop into a specialist in woodland conservation.

"In addition to having a degree in forest management, we like our recruits to have taken courses in soils—including genesis and morphology—plant ecology, economics of private forestry, public speaking, journalism, range management and wildlife management.



Tomorrow's forester?

"We want fellows with an inquiring mind, and the desire and ability to inform others. The graduates we want will obtain job satisfaction from helping landowners and operators work out and apply methodically farmwide soil and water conservation plans."

B. E. Allen, Assistant Manager, Union Bag and Paper Corporation — "We pay a great deal of attention to personality and appearance. Many of our activities—while they may be quite technical in nature — involve working with people who may not be associated with the company, including adjoining landowners. Consequently, it is very necessary that our personnel make a good impression.

"At the present time, we consider only graduates of schools of forestry accredited by the Society of American Foresters. We review their scholastic career and pay some attention to the recommendation of the faculty. Our major consideration, however, is given to the results of a series of tests administered by our Industrial Relations Division. These tests are standard in nature but give an excellent insight as to the intelligence, learning ability and interests of the prospective employee.

"We also interview each man and note with interest his reaction to leading questions as to why he studied forestry, why he thought it was a good profession to follow, and what his major ambitions might be. His attitude, appearance, method of expression are all important. We prefer men who have no difficulty in self-expression, either written or oral.

"In our interview, we endeavor to determine the depth of the man and try to think in terms of what type employee he will be 10 years hence. *Can he grow with the organization?* Let me reemphasize that we pay a great deal of attention to the results of the tests we give. Incidentally, this series of tests takes practically all day to administer."

L. J. Kugelman, Manager, Department of Woodlands, International Paper Company — "What do we want? First, let me cite you an example. Some time ago our company purchased a sizable area in the South. A young forester was assigned the task of managing the property. He suddenly found himself in full charge of some 50,000 acres of good timberland. He was also in charge of a herd of blue-blooded black angus cattle, crops of sweet potatoes and lettuce, a good-sized pecan orchard, a bamboo plantation of questionable value, two towns of over 100 modern houses, a lovely mansion with beautiful landscaping, a well-appointed community house, a scattering of retail stores, and a small machine shop. Our forester's job was to maintain public confidence, supervise the management of these diverse properties, and assist in arranging for their ultimate sale while he developed a pulpwood concentration point and constructed a landing for delivery of pulpwood to barges. In short he was expected to be everything to that community— mayor, police chief, foreman, renting agent—everything but midwife. I am pleased to say that our forester handled this assignment with conspicuous success.

"How should the prospective young forester set his sights? First of all, I would stress the importance of 'early skills' to help tide him over his probationary period. Most generally the beginning forester will be called upon to assist with inventory work, perhaps cruising and line work. He should be sure

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THE BIG STEP

By RICHARD W. BEHAN
Forestry Student, Montana State

This prize winning article reveals the myriad of sensations experienced by smoke jumpers between the cries "You've got a fire jump" and "Get the heck out of here"

IT'S the DC-3 this time, and it's so big and cold and impersonal somehow. It's not just the bigger shock you get out of the Doug—you've jumped it before — but it doesn't seem as friendly as the Ford — too expensive and business-like, maybe. Anyhow, the spotter lines you up in order, which doesn't make any difference, really, because the first guys in always take the seats nearest the door anyway, even if they are supposed to move back. You get to the door and a couple of guys each grab a leg and pitch you into the plane—you can't climb in yourself all trussed up in the jump-suit. So you fall on your face on the floor thinking how much fun it would be to go through that door just once, either way, like a human thing instead of a monkey.

It's an animal sensation, really, like you feel when you hear good Dixieland music. When you hear the squawk-box say you've got a fire-jump, that's when the whim-whams begin. You grab your hard-hat and personal gear bag, and hustle over to the loft like you're really anxious to go. There'll be some other guys there suiting up already, kidding each other about the load of dirty laundry in the other guy's back-pack. And somehow it's always just hotter than blazes, and they don't want you cluttering up the loft, so you go outside in the sun. You dump your gear out on the ground, and like as not something's missing—your gloves or your let-down rope or something. Usually, though, everything's there, but you can't find your gloves because you put 'em in your helmet last time.

You start getting into your things —first an elastic "girdle" that keeps your innards from bouncing around later, then the high-collared jacket, and finally your stout, padded canvas pants. You shove the hundred-foot, let-down rope into the big pocket on your right leg while all around you are 15 other guys—the Doug carries 16 men — doing the same things. You glance at your reflection in the window—"Tense, boy? What the hell are you doing here, anyway?" You'll ask yourself that question a few more times in the next half-hour or so.

You snake into the parachute harness, pull the leg straps under, and shove the ends into the quick-release box on your chest. The harness bends you over, but you remember that if it fits right, you can't stand up very well. This ought to be a perfect fit, you think.

One of the guys who isn't going clips on your chest-pack emergency in front, and then you bend 'way over so he can strap on the main chute. He pushes the belt through the harness and you cuss a bit because the end of the belt is always frayed and won't fit into the buckle. But you finally get it and waddle over to sit down with the rest of the guys to wait for the plane. You feel awfully skinny all bunched up in the suit. You try to push your stomach, but you don't get far—the harness is too snug, but just right. Somebody says something about seeing a rigger tying knots in the canopies—somebody else says any good Boy Scout should be able to untie knots anywhere, any time. Another wave of the whim-whams gets you when the plane arrives.

The spotter gets in last, pulls up the ladder, and hooks the strap across the doorway. The strap doesn't look like a very permanent door at all.

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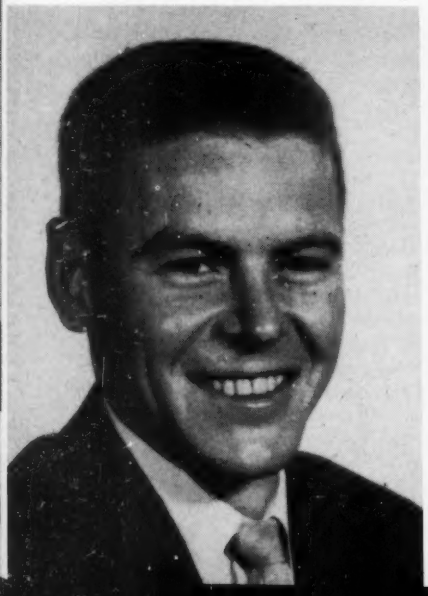
Author Behan took "the big step"

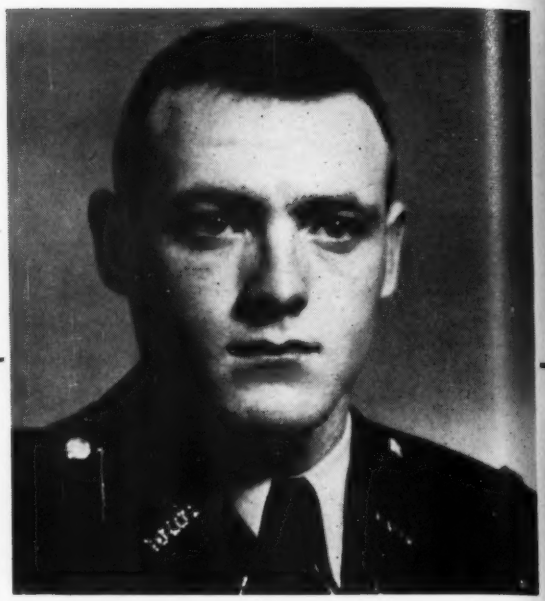


Equipment check before signal to jump

Jump! Then everything seems all right

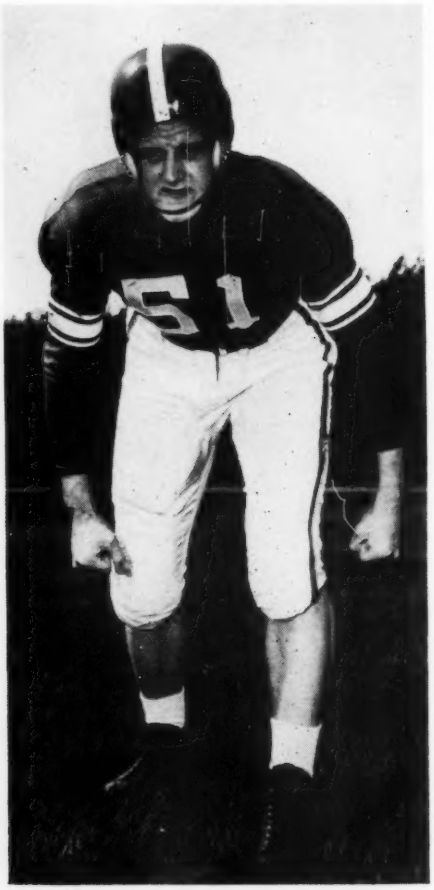
Smoke jumping is very expensive with parachutes costing about $250 and airplane rental at $100 per hour, but burned up timber costs money too

MEN IN FORESTRY

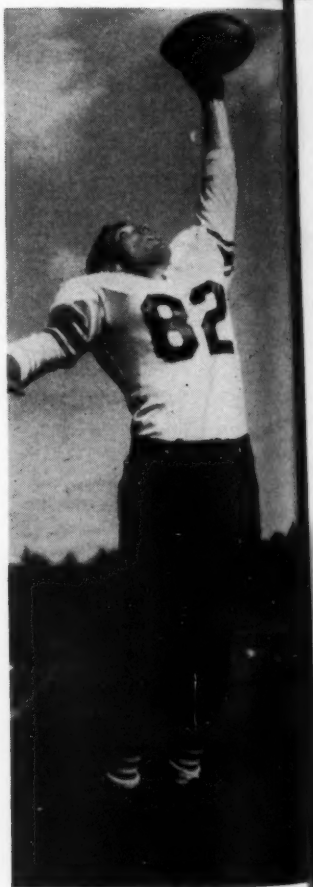


William Warner is a major in his ROTC unit and a major in forestry at Iowa State College. Foresters make good soldiers—are rugged and willing to accept responsibility

Forestry as a career appeals to the he-man type. Forester Dick Day, Class of '55, University of California was a smashing lineman and star kicker



The center on any Michigan State football team has to be rugged. Forester Jim Neal filled the bill and was also an outstanding forestry student



Smart, alert All-Maine End Don Woodsun—also a quick thinker in forestry. Don attended the University of Maine at Orono

The food isn't fancy but there's plenty of it at the Yale Forestry School Summer Camp at Great Mountain Forest in Connecticut. Summer camp is one of the highlights in the career of all forestry students

Foresters have an eye for beauty too. Jane Hastings, a recent Calico Queen caught eye of Maine forestry students

Rock and roll at the summer camp of the State College of Forestry of Syracuse University. At night, in forestry camps around the country, students have to learn to entertain themselves. A piano always helps

The World's Largest Forestry School

Professor [illegible] E. Carlson, left, interviews Mr. E. Sigurd Johnson

AMERICAN FORESTS is pleased to present this firsthand report by an American forester of his recent visit to the big S. M. Kirov Academy of Forest Technology in Leningrad. With an enrollment between four and five thousand students, this is unquestionably the largest forestry school in the world. On the basis of Mr. Johnson's report it also is obvious that Russian forestry today is making rapid strides in a country that is already blessed by an abundance of prime timber. *American Forests* sincerely hopes that the accuracy and caliber of this report will prove such that many more American foresters will have an opportunity to meet and compare notes with their fellow professionals in Russia. As for *American Forests,* it has long wished that it might one day have the opportunity to present its own firsthand report on forestry progress in the USSR.

Prof. Floyd E. Carlson, who conducts this interview, is associate professor of Forest Extension, State University College of Forestry at Syracuse University. It was just a year ago last Christmas, that E. Sigurd Johnson, professor of furniture manufacturing and management at North Carolina State College, Department of Industrial Engineering, Raleigh, North Carolina, obtained a visa to enter Russia and visit the Academy of Forestry—Editor.

Prof. Carlson: Mr. Johnson, how did you happen to decide to visit the S. M. Kirov Academy of Forest Technology in Leningrad?

Mr. Johnson: Well I developed a desire to visit this Academy of Forest Technology as well as other places in the Soviet Union because I have done considerable consulting engineering work in Europe during summer vacations from 1952 up to the present. In the spring of 1954, I applied for a visa to visit the Soviet Union in order to visit educational and research institutions and the Soviet furniture industry. But I received no action on my visa even though I continually requested it from the Soviet authorities until December, 1955, when I was notified that a visa would be issued.

Q. But you had been in Europe before?

A. Yes, I have made educational visits and done consulting work for furniture factories and other wood working industries in Great Britain, Ireland, Netherlands, Belgium, France, Germany, Switzerland, Austria, Italy, Denmark, Sweden, Finland, and Norway.

Q. And now this was your first opportunity to get behind the so-called Iron Curtain. How did you travel, and from what point did you leave for Russia?

A. I traveled by air and left the day after Christmas, 1955, from Helsinki, Finland, and flew to Leningrad in a Russian plane.

Q. How were you met at the airport?

A. At the airport a bus came out to the plane and an immigration inspector took the passports of the

other two passengers and myself. We all rode in the bus together to the terminal on the field.

Q. And what happened when you got to the terminal?

A. I went by taxi to the Hotel Astoria in the middle of Leningrad. The first thing I did was to go to the Intourist, the Russian tourist agency which had an office in the lobby of the hotel. You see—I had purchased an all expense tour of Russia in New York City where I had been given a receipt. Now, here at Intourist in Leningrad, I exchanged this receipt for a book of coupons which I used instead of money, to pay for meals, hotel, etc. After lunch, Intourist arranged for me to go out and visit the Academy. I went by taxi with Intourist's chief interpreter—a lady.

Q. Then before you left the United States you had paid for the cost of traveling in Russia?

A. Yes, I paid $30 a day for my expected visit in the Soviet Union, which included hotel, meals, interpreter service, guide service, local taxi service, and train transportation. When I got my coupons, I found I had purchased a deluxe suite – bedroom, bath, and sitting room with writing desk!

Q. So, when you and the interpreter arrived at the Forest Academy, it was early afternoon. What was your first impression of the S. M. Kirov Forest Academy? Was it a small building, a large building, or what?

A. It was a medium sized building several stories high, a typical university type of building of rectangular shape, of no particular type of architecture, built of stone with a main entrance equipped with storm doors because of the cold weather and snow.

Q. Was the Academy of Forestry in the city of Leningrad or on the outskirts?

A. I would say that it is in the outskirts of the city, but definitely within the city limits.

Q. Did you have the impression that the Forest Academy was part of a university or a separate institution?

A. Well, I had the impression that it was a separate institution, but large enough to be practically a university in itself, except that it was covering only the one field of forestry.

Q. Now, as you entered the Academy, what was the spirit of your greeting? Was it friendly?

A. It was a very friendly greeting and Professor Nikitin, the head of the Forest Academy, was apparently very pleased to greet me as representing a technically trained man and a forester from the U. S.

Q. You got the impression, perhaps, that few American foresters had visited there?

A. I had the impression that very few American foresters had visited the Academy, though I believe they had visits from foresters of some other countries.

Q. How long did you actually spend at the Academy in this first meeting?

Forest education and research at S. M. Kirov Academy of Forest Technology are equal to the best in western world

A. Well, I spent between one and two hours talking to Professor Nikitin and to one or two department heads who came through and who were introduced and spoke a short time.

Q. What did you learn about the institution at that time?

A. That it was a very old institution, 150 years old, the oldest one of its kind in Russia. They are quite proud of its history. It had been in operation under the Czars and then continued as an Academy of Forest Technology under the Soviet Union. It was a large school *having between four and five thousand students* studying all phases of forestry, from the growing of the trees through the utilization of wood – both physical and chemical utilization.

Q. Did you get the impression that this school was mainly a school for men?

A. No, the student body apparently was made up of a large percentage of women, I would say somewheres between 25 and 50% of the students were women.

Q. Was this forestry school training entirely at the professional level?

A. From a study of the curricula which they taught, it was definitely on a professional level. Students were required to be very well grounded in basic sciences—mathematics, chemistry, and physics, I would say possibly to a higher degree then is required in most professional forestry schools in the United States.

Q. In talking with the professors, did you have a feeling that there was freedom of outlook and expression for the individual instructor?

A. Well, I received that impression when I was there. Whether it has always been like that or it is part of the new look, I do not know. However, in talking to the professors, they apparently had a general knowledge of what was going on in the rest of the world. They discussed any subject openly and freely. They never refused to answer any question that I asked and apparently to me had a very open mind and a broad viewpoint. They were the same type of men that you would expect to meet at a British university or a German university, or an American university.

Q. What about the heads of departments, did they have any special obligations to perform?

A. The professors had a teaching load comparable to ours, and in addition every professor was required to conduct at least one personal research project continuously as part of his work.

Q. So research and teaching was a part of the work load of all the faculty?

A. That's right. In fact, the administrative head, Professor Nikitin, still gave, I believe, one or two lectures a week in wood chemistry, his special field.

Q. Was the faculty organized into instructors, assistants, associates, full professors, and heads of departments as you commonly find them in this country and in Europe?

A. Yes, there were these divisions of responsibility and rank, but I did not get the details of this. But there was a break down, beginning at the lower ranking people and advancing up. The department heads and full professors apparently had a very good job.

Q. How many instructors were in the institution, did you get any idea of that?

A. No, I don't remember.

Q. You mentioned several departments. By that would you say a half dozen or more?

A. I would say there were probably more departments than that, because I told them that I was only interested in the utilization field, particularly those fields which would be applicable to some phase of furniture manufacturing. Therefore, I was only shown the departments concerned with this, such as machining, gluing and drying, and met those department heads. However, it was apparent that each field, such as the ones I mentioned, were headed by a department head rather than by a general utilization head.

Q. I presume they were attracted to your work because you had given special attention to the chip board development in this country and elsewhere?

A. Yes, I have spent a considerable time studying chip board research and manufacture. However, they are just beginning this work in the Soviet Union because they have a plentiful supply of timber. And being a country based upon a system of priority, they don't work on a subject until it is given the priority where it requires these government men to work on it. When I was there they were just beginning the study of chip board manufacture. I saw no evidence of it at the Academy of Forest Technology although they were begining the study at the Forest Products Research Laboratory in Moscow.

Q. Did you feel that there was anything but an ordinary interest in the work that you were carrying on?

A. They asked questions, but nothing unusual. It was the same type of questions that would be asked by anyone visiting a new institution. They asked me questions about my work and the type of work in the United States, teaching load of professors, and such questions.

Q. As you visited with the heads of departments and professors that happened to come in, did any of the others speak English?

A. Well, the only one who spoke English that I met this first day was Professor Nitikin, though I did meet two other professors the next day who spoke English.

Q. Did you get the impression that the heads of the departments were more specialized in their particular work area than in this country?

A. Yes, I received the impression that there was greater specialization than is normally done in this country; but their basic education, as far as sciences are concerned, was broad and very intensive, probably to a higher degree than is usual in this country. After this basic work was finished the professors specialized, both in their study and in their work, to a greater extent than is done here.

Q. So one professor didn't cover more than one area?

A. No, no, these men were specialized. For instance, the man in charge of drying—that was his only field. He may have contacted the other professors if their work tied together, but his own work was only in the field of drying, partly because he had a large enough student body to keep him busy just in that one field.

Q. Following your first visit of an hour or two what did you do?

A. Well, we went back to the hotel by the taxi which had waited for us because we were quite a ways out from the center of the city. I had dinner at the hotel and after dinner the interpreter and I visited the new subway system which had just been put into operation a few weeks before.

Q. You said the interpreter was not a man but a woman?

A. Yes, the interpreter was a woman, about 40 years old.

Q. Did she speak English fluently?

A. She spoke English fluently. It was her second language. The interpreters were required to perfect at least two languages. Her first language was French.

Q. Did you return to the Forest Academy the next day?

A. Yes, the next morning about 10 o'clock I returned to the S.M. Kirov Academy of Forest Technology by taxi with another interpreter—younger and prettier! Professor Nitikin turned the interpreter and me over to two professors and one of their English language instructors; and as a group we visited different departments concerned with wood utilization.

Q. What department did you visit first?

A. We visited the machining laboratory where students were making some studies on the cutting action of tools and the effect of several variables.

Q. Were there a number of students at work in this machining laboratory?

A. There were apparently between 15 and 20 students in the laboratory.

Q. And there were women students?

A. There were women among them, yes.

Q. What about the condition of the machines? Were they modern or not?

A. Well this machining laboratory had production size machines in it and they were of rather old type. The research equipment I had seen was very good and new, but the production research equipment was rather old and not of the latest type.

Q. Did you happen to observe whether the students were in uniform or in ordinary dress?

A. The students were not in uniform. They were dressed in normal western clothes, but rather drab type—but in the laboratory they wore smocks.

Q. By the way, what about the professors—what type of dress were they wearing?

A. They were wearing normal western clothes—ordinary dress shirt, suit, and tie.

Q. You say tie?

A. Yes, they were all wearing ties. I didn't meet any official or professor in the Soviet Union who was not wearing a tie just like we do.

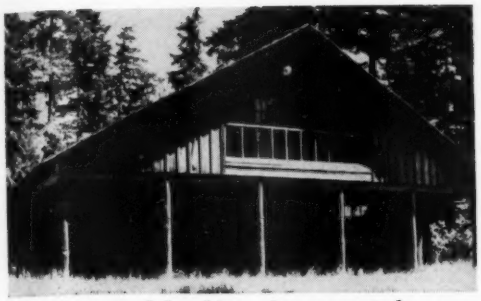
Q. Did you see anything else of interest in this first laboratory you visited?

A. Well, in addition to the studies which the students were making on cutting tools, one side of the laboratory was turned over to a group of mechanics who were setting up three continuous production lines for making furniture parts of a simple dining room chair. The work was carried on under the direction of the Academy. Later these machines would be moved into a new chair factory.

One of the three lines was in operation, it happened to be making chair rails. It was demonstrated to me and was quite good.

When the machines were working

(*Turn to page* 59)



New forestry club cabin as it appears today, was built by young men who would not be beat

Many distinguished foresters attended the dedication, in 1926, of the first forestry club cabin. Former Dean G. W. Peavy is fourth from right

YOU CAN'T LICK A FERNHOPPER

Present day forestry students at Oregon State College have demonstrated that they too have the vision, courage, and intestinal fortitude—characteristics of their predecessors

By W. F. McCULLOCH

MORE than 30 years ago, forestry students at Oregon State College decided that a school forest would help the program. So they pledged their hard-earned money, bought a piece of timber and gave it to the school. This generous action was the beginning of the school's McDonald Forest, today a 6,000 acre tract west of highway 99W, a few miles north of Corvallis.

A forest really isn't complete without a log cabin, so the students of three decades ago, now men famous in forestry, went into their newly purchased woods and felled and bucked and yarded out the logs. The typical log cabin they built for the forestry club was a good big one, 34 feet by 54 feet, made with specially selected long trunks laid horizontally and saddled at the corners in the traditional manner. It was carefully built, and this good work gave the forestry club fernhoppers a headquarters which they enjoyed mightily for almost 25 years. In a stroke of bad luck the cabin burned in 1949, and headshakers declared it could never be replaced. The old rough tough cabin builders were a vanished tribe they said; foresters now had gone out of the cabin business and could never duplicate the fine job of the rugged Paul Bunyans of years ago.

But ashes had hardly cooled that dismal February day in 1949 when the foresters at OSC cleaned up the site and took stock. All they had left was a concrete floor cracked into rubble. But behind the rubble was a forest and behind the forest were young men who would not be beat. One of them sparked the idea of rebuilding at once, and it ran through the gang like a Douglasfir slash fire in August. Plans were planned, and jobs assigned, and oaths sworn to build a new cabin without delay. So they got at it.

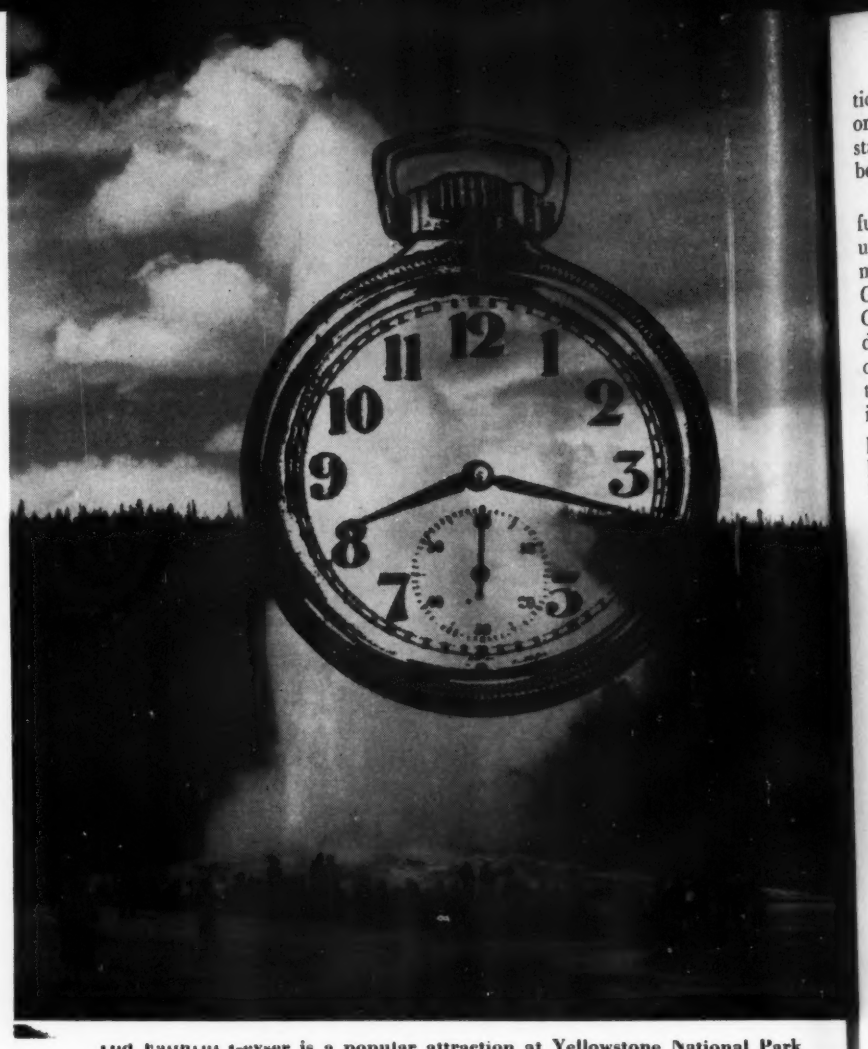
Two men in the dead of the worst winter in 28 years gave up their Christmas vacation and felled cedar snags, bucked them into bolts while knee-deep in snow, and patiently rived out long thick shakes with old-fashioned froe and club.

Two more men on bended knees with trowel and scraper pushed, scraped and sweated. And after many long-weary nights, polished a new concrete floor to perfection.

Three men figured and pondered and stared themselves almost blind working out timber, beams, trusses, casings, caps, sills and jambs. The result of their labor was a bill of

(*Turn to page* 57)

Oregon State College fernhoppers line-up for chow at annual celebration on McDonald Forest. Original forest tract was donated by the fernhoppers of more than 30 years ago



Old Faithful Geyser is a popular attraction at Yellowstone National Park

WHEN WILL SHE BLOW?

Predictions of Old Faithful's eruptions by Park Service personnel enable visitors to this famous geyser in Yellowstone National Park to make best use of their time

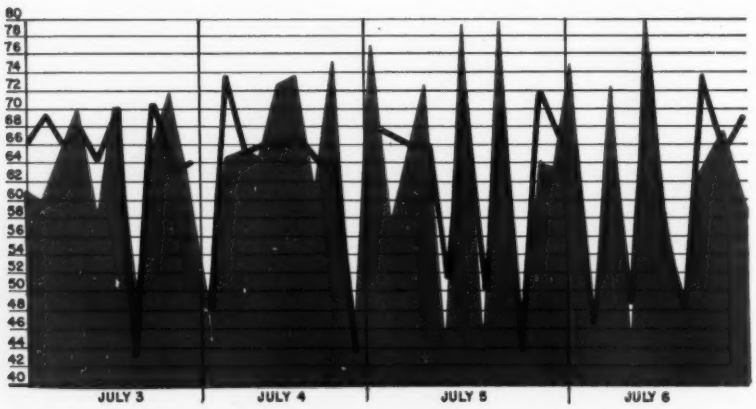
By SIMON SIMONIAN

THE question most often asked in the Old Faithful area is in regard to the next eruption time of Old Faithful. Although the wording of the question varies, a definite answer is usually expected.

To enable the rangers and the ranger naturalists to answer this question, the man on duty at the desk in the Old Faithful Museum attempts to observe Old Faithful's duration of play, and the interval of the last eruption. The prediction is then based on the two variables—the duration of play and the interval of the last eruption. With these two variables in mind, the naturalist sets the next predicted time of play on the simulated clock in the museum. The other men on duty at the station as well as many visitors throughout the season then know about when Old Faithful may erupt again.

Those of us on duty at Old Faithful who have the responsibility of making the prediction gain some satisfaction in having a prediction coincide with Old Faithful's eruption.

To determine the reliability of the predictions for Old Faithful's next time of play, the naturalists recorded the prediction time of Old Faithful from July 3 to July 13, 1956. In a study of these predictions, it can be ascertained that we are faithful to the visitor and in most instances it isn't too long before or too long after our prediction that Old Faithful erupts.



Graph 1—Red indicates the actual interval between eruptions while black line shows predicted interval

Although we begin making predictions as soon as we are on duty at 8:00 a.m., the predictions for this article include only those made for eruptions after 10:00 a.m. The reason for this is that the first two predictions usually do not take into consideration the duration of play or the interval of the last eruption or both. If these two variables are not known, the prediction may be good or considerably off Old Faithful's time of play.

Since the naturalist may be occupied giving information or dispensing literature, he may at times be unable to make an accurate observa-

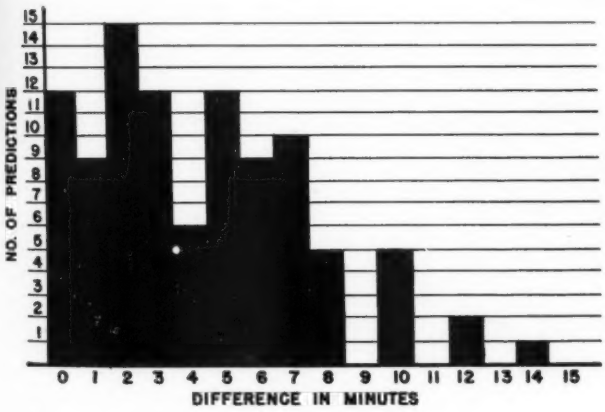
tion of Old Faithful's time of play or its duration of play. In such instances the next prediction may not be as reliable.

The average interval for Old Faithful during this period was 64.7 minutes. The shortest interval was 41 minutes; the longest was 80 minutes. Graph 1 indicates the variations in Old Faithful's intervals and the prediction of each eruption for a period of four successive days. The predictions are more often near the average interval for Old Faithful which improves the possibilities of making a prediction relatively near Old Faithful's time of play.

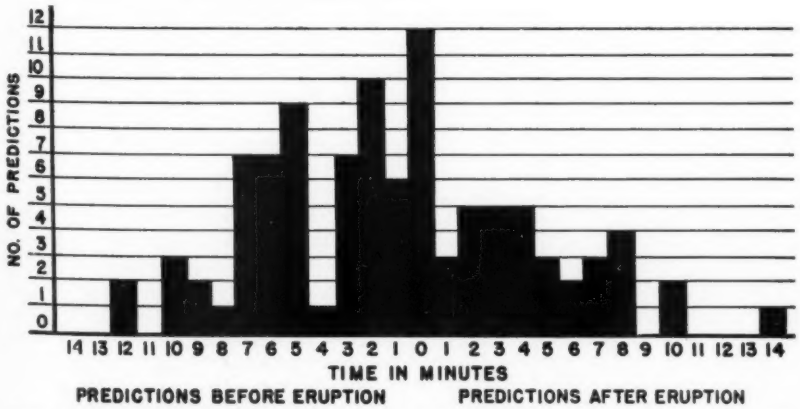
Graph 2 shows the difference in minutes and the number of times a prediction was made for 100 eruptions of Old Faithful during a ten day period. Twelve percent of the predictions coincide with Old Faithful's time of play. Forty-eight percent of the predictions were no more than 3 minutes off the eruption time. Only three percent of the predictions were more than 10 minutes from the eruption time.

The predictions are a service to the prospective viewer of Old Faithful; therefore, it is our desire that a person arrives at Old Faithful a little before it erupts rather than a little after it erupts. A majority of the predictions, 55% (Graph 3), on the museum clock were posted for a time before Old Faithful actually plays. Thirty-three percent of the predictions were for a time after Old Faithful played. Twelve percent were for the same time Old Faithful played.

As Old Faithful's interval may vary from 33 minutes to 94 minutes, it is fortunate that Old Faithful has a predictable interval enabling the visitor to make the best use of his time while on a visit. The visitor does not appreciate nor expect an "I don't know" answer when asking a uniformed Park Service employee for the time of Old Faithful's eruption. This study indicates that the park visitor, in most instances, can plan his activities in such a way that with a limited time at his disposal, he can see an eruption of Old Faithful without waiting too long. Inquiry can be made of Old Faithful's next eruption or a check of the museum clock will indicate the approximate time of Old Faithful's next play.



Graph 2—The difference in minutes of actual and predicted eruptions



Graph 3—This shows the number of predictions that were before and after the eruptions. This study included one hundred of Old Faithful Geyser's eruptions

Three Sisters Wilderness Reduced in Size. Two New Areas Created

THE Three Sisters Wilderness Area of Oregon was reduced in size by 53,000 acres last month. Two new areas that were created bring the Oregon Wilderness total up to 747,983 acres.

Mountainous areas surrounding the famous Three Sisters peaks will be kept in a natural condition, with roads, timber cutting, or other developments prohibited.

Horse Creek was named the western boundary of this wilderness area. However, during the restudy of this area to determine boundaries, a controversy developed around the 53,000-acre tract west of Horse Creek. Some believed it should be in wilderness while others thought it would have more public value under multiple-use management and timber production on a sustained-yield basis.

The Department of Agriculture pointed out that the importance of wilderness as a resource was fully recognized, but that it is necessary to maintain a proper balance between areas set for wilderness and those for multiple use.

The decision which created the Three Sisters Wilderness Area also included the establishment of Mt. Washington and Diamond Peak Wild Areas, totalling 82,000 acres, in the same locality. These three new areas should adequately meet the needs for wilderness recreation in the central Oregon Cascades. With these additional areas, plus the seven previously established, some 747,983 acres are being devoted to wilderness in Oregon.

The Department of Agriculture has also announced that wilderness features of national forest lands adjoining the old Hoover Primitive Area in California have been included in new boundaries which double the size of the area.

Forester's Notebook

By KENNETH B. POMEROY
Chief Forester, AFA

THE directors of The American Forestry Association, at their February 15, 1957, board meeting made the following recommendations regarding legislation now being considered by Congress.

BILLS ENDORSED

H.R. 3831 — PUBLIC USE OF NATIONAL FORESTS. Rep. George Grant (Alabama). This bill declares it to be the policy of Congress that all resources of the national forests shall be so managed as to assure maximum public multiple use thereof; that recreation, hunting, fishing and wildlife habitat enjoyment is a proper use of such lands; that development for such public use, coordination of wildlife habitat with other resources, MAINTENANCE OF WILDERNESS AREAS, and concurrent maintenance of other forest values, including sources of water, is a proper function of the Secretary of Agriculture. Unlike other bills pertaining to wilderness, this bill does NOT call for creation of any additional governmental agency such as a Wilderness Preservation Council.

Endorsement of H.R. 3831 is in accordance with AFA's resolution of July 6, 1956, when it opposed S. 4013 for creation of a National Wilderness Preservation System but said, "The American Forestry Association would be pleased to consider on its merit any legislation which recognized the wilderness concept as one of the basic uses of the nation's forests."

S.J. RES. 35 — GOLDEN ANNIVERSARY OF GOVERNOR'S CONSERVATION CONFERENCE. Senators James E. Murray and others. Also H.J. Res. 186 by Rep. John D. Dingell, and other Joint Resolutions. Provide for observance and commemoration of the 50th Anniversary of the first conference of state governors called in 1908 by Theodore Roosevelt for the purpose of considering conservation problems. (This has been reported for passage by the Senate Committee on Interior and Related Affairs and is now before the House Judiciary Committee.)

S. 342—AUTHORITY TO IMPLEMENT MISSION 66. Senator Arthur V. Watkins. Gives the Secretary of the Interior additional authority to implement the ten-year "Mission 66" plan for rehabilitation and improvement of the National Park System.

S. 469—TERMINATION OF FEDERAL SUPERVISION OVER

THE KLAMATH INDIANS. Senators Richard L. Neuberger and Wayne L. Morse. This bill defers termination for eighteen months to permit development of plans for protection of the timber resource without endangering the economy of the Klamath Basin. It also authorizes the United States to defray the cost of assisting the Klamath Tribe to prepare for termination of federal supervision. (AFA also instructed its staff to study the problems involved and report to the Executive Committee as soon as possible.)

S. 846—NATIONAL OUTDOOR RECREATION RESOURCES REVIEW COMMISSION. Senator Clinton P. Anderson. Also H.R. 3594, Rep. Clair Engle. These bills call for study of all the outdoor recreation resources of federal, state and private lands (exclusive of golf courses and similar municipal facilities); preparation of an estimate of requirements by the year 1976 and the year 2000; recommendations to meet such future requirements; and a report to the President and Congress not later than December 31, 1959.

H.R. 783—EFFECTS OF INSECTICIDES, HERBICIDES AND FUNGICIDES UPON FISH AND WILDLIFE. Rep. Lee Metcalf. This bill directs the Secretary of the Interior to study the effects and to provide basic data on the various chemical controls so that forests, croplands and marshes can be sprayed with minimum losses of fish and wildlife. AFA endorses this proposal and also recommends that it be broadened to include similar activities in the Department of Agriculture.

H.R. 1058 and H.R. 1127—PRESERVATION OF KEY DEER. Rep. Charles E. Bennett and Rep. Dante B. Fascell. To preserve the diminutive key deer and other wildlife resources of the Florida Keys by the establishment of a National Key Deer Refuge. This bill authorizes establishment of a refuge, not to exceed 1000 acres in size, limits the acquisition fund to $35,000, and prohibits condemnation on any island traversed by U. S. Highway No. 1.

H.R. 3997—SOIL BANK. Rep. John J. Riley. This bill amends the Soil Bank Act so as to require that contracts for the establishment of tree cover under the conservation reserve program shall extend for fifteen years. (AFA directors observed that this extension is needed in the northern sections where trees normally grow more slowly.)

APPROPRIATIONS FOR THE U. S. FOREST SERVICE. AFA's Board of Directors endorsed the budget as submitted to Congress; regretted that wildlife did not receive more attention; and recommended that special consideration be given to forest fire research.

BILLS OPPOSED

S. 840—PRICE REPORTING AND RESEARCH WITH RESPECT TO FOREST PRODUCTS. Senator Hubert H. Humphrey. This bill is unnecessary in that the Secretary of Agriculture already has ample authority to establish price reporting services in cooperation with states desiring such assistance and to carry out needed research. Every state except Arizona, New Mexico and Nevada has established one or more features of a desirable marketing service program. In 17 states, price reports are issued by state agencies, in one state a price report is issued by a federal agency and two states have cooperative federal-state programs. Other states publish lists of buyers, products, and methods of marketing.

H.R. 2860—NATIONAL GRAZING RESERVE. Rep. Henry A. Dixon. This bill declares it "the policy of the Congress to protect the incomes of livestock producers, to provide for the conservation and improvement of the national range land resources from waste and depletion, to insure the maintenance of a healthy livestock industry . . . ." The Secretary of Agriculture would be authorized to expend up to $300 million per year for payments for (1) reducing below the numbers allotted under their respective permits, the numbers of livestock grazed on the public lands, (2) for reducing grazing periods below their permitted periods, (3) for carrying out various conservation measures. The maximum payment allowed to any one livestock producer would be $10,000 per calendar year. Contract could extend to December 31, 1969.

Enactment of this bill would tend to give the livestock industry a vested interest in the public lands.

BILLS TABLED

S. 1136—ACCESS ROADS. Senator Wayne Morse. This bill authorizes the appropriation of funds for carrying out provisions of the Federal Highway Act to enable the Secretary of Agriculture to construct and maintain timber access roads on the national forests; and to establish a revolving fund for the construction of similar roads on Indian reservations. While sympathetic to the principle of access road construction by the federal government as against construction by the purchasers of federal timber with accompanying reduction of stumpage rates, AFA feels that such funds should be appropriated directly to the agencies concerned.

H. R. 2484—MEMORIAL TO THEODORE ROOSEVELT. AFA feels that the selection, location and construction of a suitable memorial are matters for the Theodore Roosevelt Association and the Theodore Roosevelt Centennial Commission to consider.

H. R. 385—FAIR LABOR STANDARD S ACT. Rep. Peter W. Rodino, Jr. Among other things this bill concerns the "12-man" and seasonal exemptions for forestry and logging work. The Board of Directors feels that this is not a proper concern of AFA.

OTHER RECOMMENDATIONS

Creation of a Water Resources Board of Review. The directors of AFA recommend that a Water Resources Board of Review be created in accordance with earlier recommendations of the Hoover Commission, the President's Advisory Committee, and the Kestnbaum Commission on Intergovernmental Relations. The objectives of such a review board would be (1) to determine and implement a sound and practical policy in the development of the water resources of the nation, (2) to expedite programs which are demonstrably required for flood control, soil conservation and reclamation, and water supply.

The Board of Directors also recommended that AFA select Water as the theme for its 1958 annual meeting.

AFA Elects Regional Vice Presidents

The Board of Directors of The American Forestry Association has elected five regional vice presidents to facilitate the work of the association. The following regional vice presidents were named: G. L. Paret, Southern Region; Lloyd E. Partain, Northeastern Region; X. L. Pellicer, Southeastern Region; W. S. Rosecrans, Western Region; and Peter E. Terzick, Central Region.

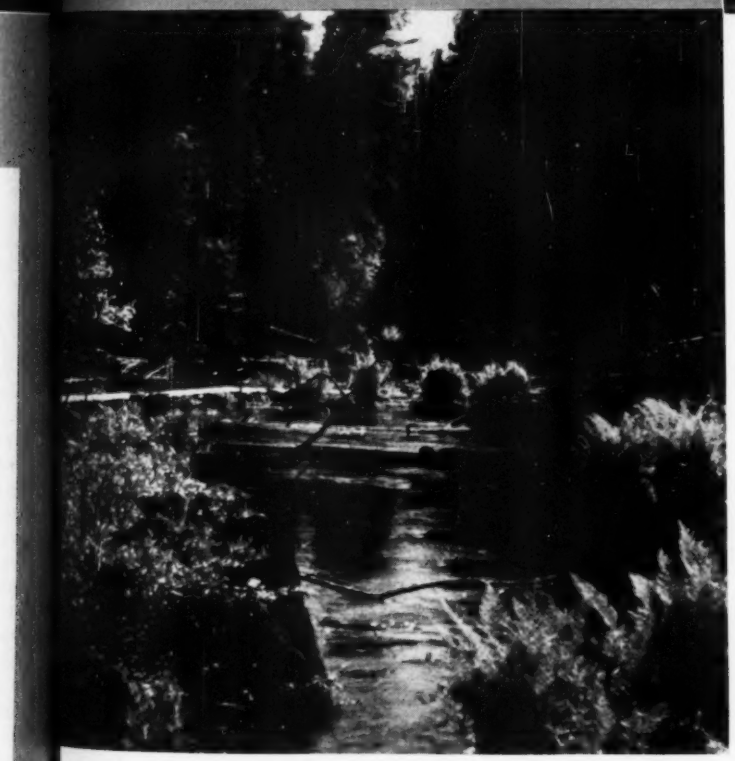
The Klamath Tribal Executive Committee discusses the future of the Indians and the ponderosa pine forests. Committee members present are (l. to r.) Wernie Foster, Mrs. Dorothea McAnulty, Exec. Committee Chairman Delford Lang, Dice Crane, Jesse Kirk, Elnathan Davis & Boyd Jackson

The logs from the ponderosa pine forests on the Klamath Indian Reservation are loaded on to logging trucks by the use of a mobile loader. This picture is a view of a log being swung from the log deck onto the back of the log truck which has been backed up to the mobile loader

A FOREST in JEOPARDY

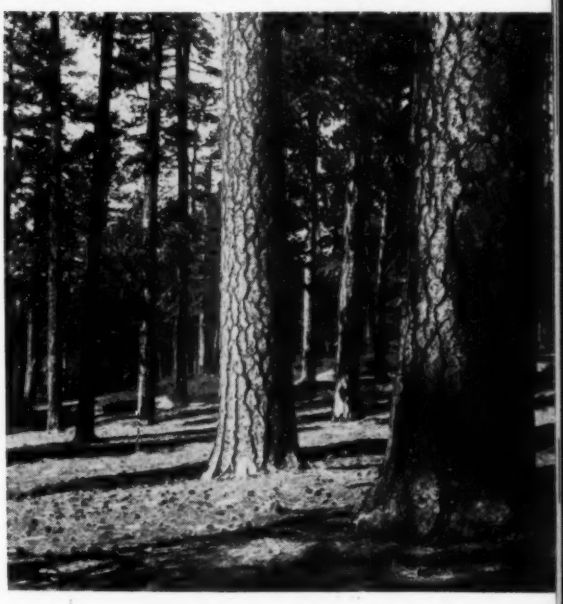
THIS ponderosa pine forest of 590,000 acres in Oregon may go on the block and be destroyed if upwards of 80 percent of the Klamath Tribe of Indians elects to cash in on its assets and leave the tribe as permitted under Public Law 587. Present indication is that the Indians will do that very thing unless Congress and the Administration act in concert to insure continuance of present sustained yield practices as carried on in behalf of the Indians who own the land. Earle R. Wilcox, forester for the Management Specialists in charge of the program, says the present law will result in irreparable damage both to the Indians and the forests. He sees the Klamath issue as a moral matter. "We may fail in our effort to save the forest," he says, "but I'll never be able to sleep right again if we fail to do everything in our power to save it." When it recommended termination, the Bureau of Indian Affairs never dreamed so many Indians would demand their share of tribal property in cash.

The important water resources as well as the scenic beauty of the region have been protected and preserved by the selective type of logging that has been practiced on the Klamath Reservation's forestland



This is a view from a rock directly above the huge spring that forms the head of Fort Creek—the large creek that is part of valuable water resources of the reservation. Forested slopes protect the watersheds in the Klamath lands, contribute to water supply of region

Climate is a major influence on the forest growth on the reservation. Because of the relatively high elevation, the growing season does not begin until late June, and is completed by early part of October



Trail Riders of the Wilderness expedition on the Sawtooth National Forest in Idaho

TRAIL RIDERS

By DOROTHY DIXON

In the national plan for increased educational and recreational opportunities, these wilderness expeditions are important factors

IN THE heart of the Rockies where six lofty mountain ranges meet, Trail Riders of the Wilderness will assemble at Missoula, Montana, on an afternoon next July. A short time later the first of the 1957 horseback expeditions, sponsored annually by The American Forestry Association, will be penetrating one of the greatest mountain wildernesses of the United States.

This expedition like the others to follow will be a real outlet for the love of outdoor adventure which dwells in each of us. It is open to people of the city, small town and country alike—to individuals, to parents and older children.

The coming season marks the 24th year of trail riding in the historical Sun River Valley of the Flathead, Lolo and Lewis and Clark National Forests. This region is unsurpassed in the variety of interests which it offers to the sportsmen, naturalists, recreation seekers, students of Indian lore, and geologists. Its stupendous limestone peaks, reefs, and precipices compare favorably with the famous skyline of Glacier National Park, which is perhaps unequalled in America. The popularity of the Flathead-Sun River trip has remained undiminished through the years and is a tribute both to its organization and the region itself. Joe Murphy of Ovando, Montana, will be ready again with horses and camping equipment to guide the 1957 Montana expeditions from July 5 to July 16 and July 16 to July 27.

In the neighboring state of Wyoming lies the Bridger National Forest, named in honor of one of the outstanding characters of early Wyoming history, Jim Bridger. Here in this colorful, historic region Trail Riders of the Wilderness will explore the Wind River Mountains and surrounding plains on the dates of July 15 to July 26 and again on August 5 to August 16. Walt Lozier of the Open Box R Ranch at Cora, Wyoming, is outfitter for the two parties.

The High Uintas Wilderness Area in the Ashley National Forest of Utah—a country rich in scenic, geological, biological, botanical and recreational interests — will afford Trail Riders an unforgettable experience as they explore this magnificent wilderness from July 15 to July 25. The numerous lakes and clear mountain streams provide unexcelled fishing opportunities for eager anglers; and camera enthusiasts will have a field day stalking the deer, elk and other wildlife with which this region abounds. Bob Davis will again serve as outfitter for the party which will come together at the U Bar Ranch in Neola.

Trail Riders will be pleased to know that Bob Davis also will service two groups who will penetrate the Maroon Bells-Snowmass Wilderness in the Colorado White River and Gunnison National Forests this summer. The dates are July 29 to August 8 and August 9 to August 19. All who visit this region of rare beauty in the Colorado Rockies acclaim it a favorite site for trail riding, mountain climbing and fishing.

Under the very rim of the Continental Divide in southwestern Colorado lies another dramatic and colorful wilderness. Here in the heart of the mountainous San Juan National Forest, Trail Riders of the

Trail Riders of the Wilderness
Schedule of Expeditions for 1957

FLATHEAD-SUN RIVER WILDERNESS, MONTANA
July 5 to July 16; July 16 to July 27
$220 from Missoula
Parties limited to 25

QUETICO-SUPERIOR WILDERNESS, MINNESOTA — Canoe Trip
July 15 to July 24
$210 from Ely
Party limited to 17

WIND RIVER MOUNTAINS, WYOMING
July 15 to July 26; August 5 to August 16
$250 from Pinedale, Wyoming
Parties limited to 20

HIGH UINTAS WILDERNESS, UTAH
July 15 to July 25
$230 from Vernal, Utah
Party limited to 20

MAROON BELLS-SNOWMASS, COLORADO
July 29 to Aug. 8; Aug. 9 to Aug. 19
$230 from Glenwood Springs
Parties limited to 20

SAWTOOTH WILDERNESS, IDAHO
July 30 to Aug. 9; Aug. 13 to Aug. 23
$225 from Sun Valley
Parties limited to 25

GLACIER PEAK-LAKE CHELAN, WASHINGTON
August 5 to August 16
$225 from Wenatchee, Washington
Party limited to 25

EAGLE CAP WILDERNESS, OREGON
August 20 to August 31
$225 from La Grande, Oregon
Party limited to 25

SAN JUAN WILDERNESS, COLORADO
Aug. 20 to Aug. 30; Sept. 2 to Sept. 12
$230 from Durango
Parties limited to 25

PECOS WILDERNESS, NEW MEXICO
September 9 to September 20
$225 from Santa Fe
Party limited to 25

GREAT SMOKIES SADDLE TRIP

The spring saddle trips in the Great Smoky Mountains National Park, North Carolina, have been so successful that the association has scheduled another this year, for the dates of May 22 to June 1. Headquarters for the party of 20 will be the Cataloochee Ranch. The itinerary calls for a three-day pack trip from a base camp, including a ride to the crest of Mt. Sterling. Seven nights will be spent at the ranch with rides to Sheepback Lookout, Purchase Mountain, Paul's Gap, Balsam Mountain and other interesting points. Plan to ride in the Smokies this spring when the colorful wildflowers and flowering trees are in bloom. $200 from Asheville, North Carolina.

Write or wire for detailed information, itineraries and reservations
THE AMERICAN FORESTRY ASSOCIATION
919 Seventeenth Street, N.W., Washington 6, D. C.

Wilderness will revel in the unexcelled scenic beauty, travel little known trails, and fish in the numerous mountain lakes and streams. Dates for the two trips in this region are August 20 to August 30 and September 2 to September 12. Joe Hotter of Grand Trophy Ranch, Durango, will service the expeditions in this he-man mountain area.

Two expeditions likewise will be run in the Sawtooth Wilderness in the Sawtooth and Boise National Forests of Idaho—July 30 to August 9 and August 13 to August 23. Assembling at famous Sun Valley, the riders will meet Claude Gillespie at the entrance to the wilderness and find him fully equipped and manned to guide them through the roadless domain in which is cradled the headwaters of the Wood, Salmon and South Boise Rivers. This is a country of towering peaks, sparkling waters and verdant slopes.

In the state of Washington Trail Riders will explore the "Land of Beautiful Water." Here in the Glacier Peak-Chelan Wilderness in the Mount Baker and Wenatchee National Forests is situated one of the most scenic gems in the nation—Lake Chelan, a ribbon of blue, deep-sunk in a green forested canyon. This remote back-country is characterized by lofty peaks, living glaciers, lush mountain meadows and swift streams. Mountain goat and deer inhabit the region, and the lakes and streams are stocked with rainbow and cutthroat trout. Robert H. Nicholson, of Spanaway, Washington, will outfit the party which will assemble in Wenatchee for the trip which begins on August 5 and ends on August 16.

A few days after this expedition is completed, Bob Nicholson and his staff will meet another group of Trail Riders scheduled to explore the Eagle Cap Wilderness of the Wallowa and Whitman National Forests of eastern Oregon. A feature of this trip will be a climb to the summit of Eagle Cap Mountain, 9,675 feet above sea level, from which one can view all the scenic wonders of this area, known as "the Switzerland of America." For twelve days, August 20 to August 31, the riders will skirt snow-capped peaks and numerous hidden lakes and streams well stocked with trout.

The Pecos Wilderness expedition will start from the fascinating city of Santa Fe, New Mexico, and will travel the lush, green back country in which elevations range from 8500 to 13,300 feet. This beautiful wilderness area was once the scene of southwestern Indian activities, and pottery, arrowheads and other evidences of their existence can still be found there. Located in the Santa Fe and Carson National Forests, the region is a dramatic stretch of timberline country, of sweeping forests and open parks. Douglas O'Bannon of the Mountain View Ranch in Cowles, New Mexico, will service the group which will ride in this colorful southwestern region from September 9 to September 20.

The Quetico-Superior water wilderness in the Superior National Forest, Minnesota, is the scene for the canoe expedition, scheduled for July 15 to July 24, which starts from Ely, Minnesota. This great primitive area straddling the United States-Canadian border is a vast country of tree-studded islands and thousands of broad connecting lakes. Again, Fred Handberg, of the Quetico-Superior Outfitting Company at Ely, will service the party.

TD-24 Planet-Power

beats "dead-track drag"...boosts

—for Harper Brothers Logging Co., Eugene, Oregon

Here's the way Malcolm Harper, of Harper Brothers Logging Co., Eugene, Oregon, describes their firm's experience with International TD-24 crawler performance:

"TD-24 ability to steer with live, *full-time power on both tracks* is the feature that puts this crawler ahead of all others. Over 500 hours of use building roads and logging have proved to us the value of being able to steer without having to drag a dead track around half the time.

"The TD-24 almost builds its own roads by hugging the mountain slopes *with full power on both tracks* and pushing a full load ahead of the dozer.

"On actual logging, the TD-24 can turn smoothly up adverse grades with as big a log load as it can pull straight ahead.

"Record bf on the landing"

"With Torque-Converter drive, the TD-24 has combined smooth, easy operation with terrific pulling power—that puts a record-making board feet of logs on the landing."

Prove what it means in logging profit production to command International TD-24 capacity with *time-proven* and *exclusive* Planet-Power steering control. Try this fingertip full-load steering that gives you full-time live power on both tracks while turning—eliminates power-wasting, load-limiting "dead-track drag." Try instant, stall-preventing Hi-Lo shifting. *Compare* the TD-24 to anything else on tracks! See your International Construction Equipment Distributor for a demonstration.

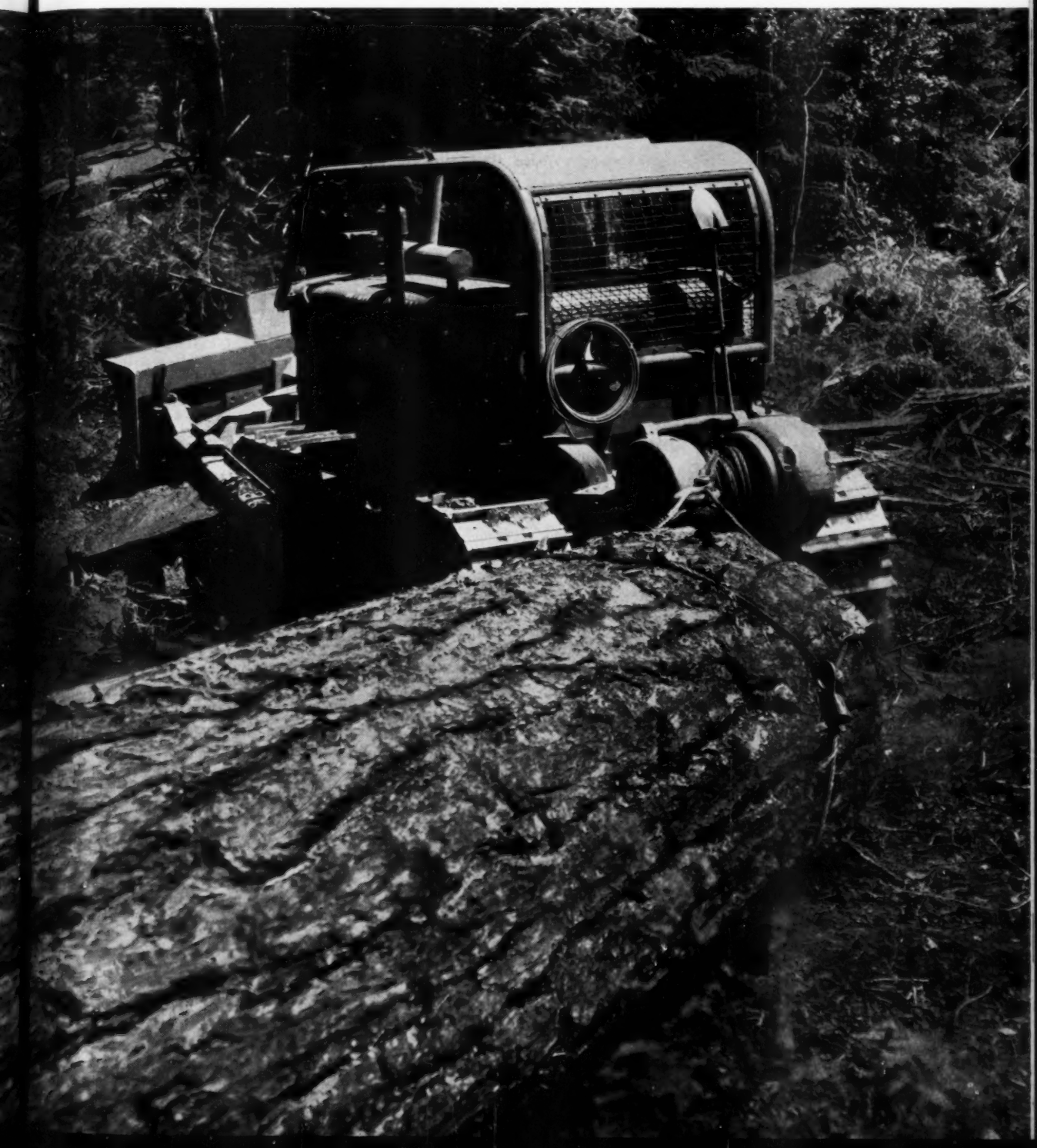
International® Construction Equipment

International Harvester Company,
180 North Michigan Ave., Chicago 1, Illinois

A COMPLETE PACKAGE INCLUDING: Crawler, Wheel, and Side-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Tractor and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . Motor Trucks

steering
log and road production

Operating in U. S. Forest Service timber northwest of Eugene, Oregon, Harper Brothers Co. do most of their falling in winter, when snow prevents trucking. During logging season, the torque Converter TD-24 "bobtail skids" the logs to the landing. Before taking out any logs, the Harpers built a 2-mile road with over a dozen switchbacks up steep mountainside.



Dr. Paul B. Sears

About the Author

Dr. Paul B. Sears is the chairman of Yale University's Department of Conservation, a position he has held since 1950, when this department was established as one of the country's first graduate programs of research and instruction in conservation of natural resources.

Dr. Sears' special interest is ecology, a science basic to conservation. In this field, he has worked throughout the United States and Mexico. He has also served as consultant, collaborator and member of many conservation agencies, both governmental and private.

The investigation of natural resources as limiting factors in human culture is the primary concern of the resource scientist

By PAUL B. SEARS

THE conservation of natural resources has various definitions. One of the most widely accepted is "the wise use of natural resources." This is often expanded to include "the greatest good to the greatest number for the longest possible time." Since wisdom and good lie outside the usual realm of measurement we may ask where science comes into the picture.

The answer, however, seems clear enough. Science should furnish the certainties upon which value judgments can be based. There its duty ends, for the individual and the community have the privilege, once the facts are in hand, to seek Heaven or go to Hell in their own way. It is necessary to note, however, that the range of information involved in such decisions is not limited to the physical and natural sciences as usually understood, but must include the processes of human society as well. Nor can the questions of the quality as well as quantity of human existence be ignored.

Thus the task of the resource scientist is first of all to investigate natural resources as limiting factors in human culture. This involves not only an appraisal of such resources, but an understanding of the needs and trends of society. In any appraisal, the resource scientist is not concerned solely with problems of *depletion*, but with those of *disruption* as well. For the supply of renewable resources depends upon maintenance of the great cycles of energy and material transformation that operate in nature and are so frequently disturbed by the multiplying power of human action.

How far beyond this analysis the resource scientist should go can be debated. Obviously he must communicate his findings to those concerned. It is my judgment, however, that he should be at liberty to point out, so far as he can, possible courses of action which may lead to solution of any problems which his study may have revealed. If he goes further, to become an advocate of any particular choice of solution, he is then functioning no longer as a scientist, but as a citizen and maker of policy. Both he and the society that he serves should be very clear about this distinction, *lest confidence in the scientist be lost by confusion with the role of the evangelist.*

Actually then the problem of natural resources is not a single dilemma but a series of them. The world we live in is so complex and the needs and behavior of human beings so varied that blanket solutions are very difficult indeed. The facts themselves are hard to come by and harder still to keep straight. For example, on two successive days recently in two reputable newspapers the problem of the United States' consumption of paper pulp was discussed. The first of these reports placed our annual consumption of paper pulp at about 165 million tons. In other words, about a ton per person. The next day another newspaper equally reliable indicated that the annual consumption was 6½ million tons. The figure appears actually to be some 300 to 400 pounds per capita, say 30 million tons in the aggregate, or about one-fourth the present annual tonnage of steel—an impressive enough figure.

Each landscape, each valley is in some respects unique and has to be studied before the facts about it are known and before solutions to its problems can be advanced with confidence. Each of us sees different possibilities in the landscape about him and each has his own desires with respect to it. Many years ago I was the guest in eastern Kansas of an elderly friend who had led an adventurous and interesting life. We went for a walk in Kaw Valley. Presently we came to a place where the valley opened up into a wide, green glade with cliffs on either side. I made some comment about the natural history of the area whereupon he reminded me that a "farmer would come in to this same valley, look around, select the site for his barn and his house, his well and his pasture, and lay out the boundaries of his fields. An engineer would look over the valley and decide on the proper location for a dam in which he could store water to generate power, supply irrigation or other public needs. A military

man on entering would immediately decide where to place his outposts, where to set his gun emplacements and his bivouac in order to achieve the maximum security. Being myself an old actor," he concluded, "I see here a great natural amphitheater." I have never forgotten this lesson.

Another dilemma arises from the fact that conflicts of interest concerning natural resources very frequently have merit on both sides and call for the art of compromise. This situation is not helped by the feeling on the part of many people that to make concession or compromise is a sign of moral weakness. Actually, I suspect, the ability to hear the other man's point of view and try to arrive at some common and just solution represents a very high type of ethical behavior indeed.

Closely related to this is a problem which in some respects is the creation of the enthusiastic conservationist himself. When he discovers, as he frequently does, that a particular situation is very bad the overwhelming temptation then is to declare war and issue ultimata, forgetting that the most costly and dangerous type of conversation in the world is ultimatum. Evangelists of conservation ought to remember that their cause is no sounder than the facts with which they can back it up. They ought to remember further that many human beings have a built-in mechanism which protects them against the extreme forms of evangelism. There is no question that considerable damage has been done by overenthusiastic and ill-based agitation on behalf of conservation measures which in themselves are probably quite meritorious.

But perhaps the most profound and serious dilemma of all arises from the fact that those whose task it is to guide public opinion cannot agree among themselves as to the importance of conservation. Generally speaking, I think *naturalists who have wide experience in field and laboratory, observing what happens when population presses too closely upon a finite resource base, are agreed that the matter is serious and that in the end any population, no matter how vigorous or resourceful, has to come to terms with the base upon which it depends.* On the other hand, there is a considerable and impressive segment of public opinion which holds that the only resource of any importance is human resourcefulness itself. This sector of opinion insists that science and technology have developed to the point where, however great an emergency created by shortage or disruption, we should be able to find a way out.

An extreme expression of this viewpoint came from an economist not long ago who said bluntly, "Why worry if we turn Kansas into a desert growing all the wheat we can? What difference will it make? We'll have something else by that time." This represents the viewpoint which holds not only that our economy is expanding but that it must continue to do so, world without end. One often hears talk of an expanding economy without any limitation but not often so baldly stated. Very seldom does one hear any expression of the importance of an equilibrium or working balance between resources and population. It is clearly futile to expect too much from the general population until those to whom it looks for guidance come to some kind of a rational agreement on matters of such fundamental importance. Obviously the two extremes of opinion must somehow get together.

My own interest in conservation problems is strictly a by-product of my work through the years as an ecologist. I have made it my business to study living communities of plants and animals, not only with a concern for the organisms that compose them but for the processes that are under way in them. As one follows this line of work through the years, he acquires a certain skill in diagnosis of the landscape.

The late Dr. Mayhew of Lincoln, Nebraska, an expert diagnostician, told of seeing Dr. Osler take a group of young physicians to the door of a hospital ward which none of them had visited, then looking down the line of beds to judge what was wrong with each patient. Thereafter, the group would go along and make a more detailed examination. Dr. Mayhew said it was remarkable how frequently Dr. Osler's first impressions were right. This, however, is less surprising when we recall the meticulous years of clinical and laboratory study with which Dr. Osler had followed through case after case as a young student of medicine.

In the same way that the physician can appraise the physical condition of his patient, an ecologist with sufficient experience is able to diagnose the landscape, that is, to form some judgment as to its relative condition of health or disorder. By a healthy landscape I mean one which is making as efficient use as possible of the available materials in the soil and atmosphere and of the solar energy which falls upon it in order to sustain the activities of living organisms. Conversely, a landscape which is making relatively inefficient use of these resources might be classed as a disordered or even a diseased landscape.

I was early impressed and depressed by the fact that it is a rather rare experience to find a landscape which one can pronounce to be in a good condition of health. And on pursuing the matter further, it often developed that the cause of the lowered efficiency lay in the activities of a single dominant species, that is *Homo* so-called *sapiens*, our own kind. Never before, so far as anyone knows, has a single species acquired worldwide dominance as man has. As early as 1860 George Perkins Marsh pointed out that man had become a geological force capable of producing great changes in the earth and that these changes frequently were not to his own ultimate benefit. His judgment on this point is all the more impressive because it was made long before the days of bulldozers and other powerful machinery.

One of my earliest undertakings as a young naturalist was an attempt to reconstruct the vegetation of Ohio as it had been at the time of European settlement. This was an interesting task in detective work involving study of the field notes of the original surveyors, diaries, histories, and all other possible sources of information. Fortunately, the early surveyors were excellent woodsmen and left an accurate account of the tree species to be found at the section corners. Thus in the end we were able to get a very useful map of the distribution of different forest types in the state as it was before clearance. Ohio at that time was about 95 per cent forested in comparison with its present 15 per cent of forest cover.

It was, however, extremely difficult to get any visual image of the appearance of the so-called virgin forest despite occasional glimpses available through the diaries or chance comments of travelers.

An Englishman, for example, wrote that it gave the impression of an endless cathedral of great columns overarched by green. But even with such notes it is not easy to form a clear impression of the original landscape.

Now the state of Ohio is generously besprinkled with more or less artistic monuments to more or less heroic or otherwise deserving characters. All these monuments have one feature in common, namely, that they cost money. However, it seems not to have occurred to any citizen of the state during its early history to set aside a fraction of the cost of one of these monuments to purchase as little as a square mile of the virgin forest so that it could be preserved intact until today to give us an adequate conception of what this great plant community was like.

The disappearance of the forest was accompanied by interesting economic changes, many of which could be observed in the course of a single lifetime. I recall a considerable factory that employed woodcarvers from Switzerland, skilled joiners from England, and a variety of other craftsmen. It not only had important contracts in this country but even abroad for the interior finish of public and private buildings, as far away as Australia and Great Britain. Only the highest standard of workmanship was tolerated. In one instance a workman happened to be sanding across the grain when he was promptly called down by the proprietor. To his protest that only one man in a thousand might notice the tiny scratches, the old German responded, "Dat's just the feller I don't want to see them." This sort of meticulous care was one among several reasons assigned for the ultimate failure of this large industrial plant. I did not realize and I doubt if anyone else did, what the real cause of its disintegration was. I know now that it was due to the fact that the essential raw materials, magnificent white oak, black walnut, and wild cherry which had sustained it had been exhausted. Since this factory was started in the 70's or 80's, it can be said with confidence that had its owners encouraged among the farmers whose woodlots supplied the timber a policy of management a fraction as efficient as was then current in Germany and Denmark, it could be continuing today to carry on a prosperous business.

After its disappearance, smaller factories using inferior and small pieces of material for the manufacture of handles, barrel staves, and similar objects were established. Today they too are gone. Yet the state of Ohio continues to use vast amounts of wood in its industrial processes, most of which must be imported. In the judgment of its foresters, at least two-thirds of its annual requirement could be produced within its borders by a policy of wood-lot management entirely consistent with its agricultural interests.

During my youthful days spent in Ohio it was my pleasure to know an elderly gentleman who was a connoisseur of spring water much as a Frenchman is a connoisseur of wine. Driving through the countryside on Sunday afternoons he would call on us to stop or turn up a side road to sample a spring of iron water, soft water, or even sulfur water. Today those springs are largely gone and have not been replaced. Similarly, in less than one lifetime has occurred the disappearance of such game as the once abundant turtledove and the quail. Even the bumblebee is getting scarce, to the great loss of the farmer who now has to pay exorbitant prices for clover seed, the bumblebee, of course, being necessary to the pollination of the red clover plant, so important in the economy of the Midwest.

It presently became my fortune to carry on work in another great vegetation province of our country, that is, the prairie. I had long been intrigued at accounts of landscapes in which one could look around the entire horizon without seeing a single tree. I had heard much, too, of the interesting animals—the prairie dog, the little owl, and the rattlesnake—in these areas. I soon found that the prairie, no less than the forest, was vanishing before the activities of our civilization. I found, moreover, that the prairie which remained was anything but a monotonous stretch of grass. It is instead a living carpet or tapestry of changing color throughout the growing season, involving a complex of many kinds of plants besides grasses. And through the ages these plants have become so adjusted to each other, to the animal life which thrives on them, and to the climatic conditions, too, that no matter what the weather might be in a given year there are always some elements in the complex capable of producing organic matter.

During the drought of the 1930's, for example, in several different states there were areas where, because of the failure of crop plants, the only forage available for livestock was native prairie someone had been careless enough or wise enough not to plow up. There, in spite of conditions which did not permit the growth of any cultivated crops, the native plants responded by a reasonable production of hay and pasture.

Climate is a constant problem in the grassland province. As a graduate student at the University of Nebraska, I had the pleasure of knowing a banker who used to drive me about the countryside. He would often point out a farm, saying that it had been in the hands of the bank several times. I think he was somewhat puzzled by this and I certainly was. It was not until much later that I understood the basic pattern which was responsible for this condition so disastrous to the economy of the area. One can get the answer either from weather records or perhaps in a more interesting fashion by examining the growth rings in the occasional stump of a bur oak to be found in some ravine. Such stumps show a consistent pattern of alternating groups of wide and narrow rings. It is very seldom indeed that a wide ring or a narrow one occurs singly; they tend to be in groups. The wide rings, of course, are the result of rapid growth during seasons of abundant moisture. The narrow rings are the product of dry years when moisture is insufficient. The basic pattern is clearly enough one of alternating groups of wet and dry years. These groups may vary, of course, in duration, anywhere from two to ten years.

After a period of moist years when crops have been excellent, farmers have had money in the bank and have gone to their banker saying that they would like to buy farms and make down payments. Banks, in turn, were asked to lend the balance and take a mortgage on the new land. So far, so good. This all represents legitimate business. The difficulty, however, lay in the fact that the land was almost invariably priced on the basis of its yield during the several favorable seasons. Then, of course, the inevitable happened. The wet years were followed by dry ones, crops failed, and there was no money to retire the principal or even to pay interest on the loan. Presently the land and the down payment were both forfeited. In the end this cycle could have but one effect on the general economy both for banks and their clients. The error, of course, lay in not setting values for the purchase that would be based on the average yield over a longer period of time in a sensible relation to the climatic pattern.

The same phenomenon had serious consequences farther West where vegetation is still more arid in character, consisting of short grasses forming a vast carpet stretching north and south along the east front of the Rocky Mountains. These interesting grasses cure on the stalk so that they retain their nutritive qualities at any season of the year. Moreover, their roots form a tight network of turf which holds the soil in place. Also, because of the rather dry character of the climate there is an accumulation of mineral salts near the top making this soil potentially very fertile. Only moisture is lacking. Yet even with-

out irrigation if the ground be plowed and planted to winter wheat during a reasonably moist time the wheat can be produced at extremely low cost by the techniques of dry farming. I knew the owner of 300 acres of wheat land which he actually farmed with less than 10 day's work a year. He kept modern machinery well-oiled, cleaned and ready to go, locked in a shed on his place. When plowing time came he would go over and plow and plant. Then he would return to his home until time came to harvest when he would again harvest by power machinery, haul the wheat off to market and have no more farming worries until time came to plow once more. This is a remarkably efficient and inexpensive way to produce wheat so long as there is enough moisture in the ground. Even after the cessation of World War I and throughout the 20's, in spite of lowered prices of wheat, this method was pursued with profit and continued into the beginning of the great depression with its bread lines in Chicago, St. Louis, Oklahoma City, and elsewhere. Having occasion to go West to Salt Lake City at this time I saw great piles that I took to be sand along the track in the western part of Kansas. I learned, however, that they were wheat. This within a few hundred miles of long bread lines! Such maladjustment, overproduction at one place, faulty distribution and great need elsewhere is the sort of thing which I have in mind when I speak of a disordered landscape. Certainly it reflects no credit on a great scientific and technological civilization such as our own.

Soon after the beginning of the depression a series of dry years set in. Wheat once more was planted but this time failed to come up and the denouement was the great dust storms of the 1930's. These have been so effectively dramatized, for example, by John Steinbeck and his "Grapes of Wrath" that I need only say that their seriousness can hardly be exaggerated. I was in the field during much of this time and observed at first hand the distress caused by the accumulation of dust, the absolute destruction of vegetation, and the abandonment of home sites. However, this disaster did have certain compensations. In the first place it served to dramatize the importance of the soil as few other things could have done. When the red dust from the west started to filter into homes and even Congressional hearing rooms in the East, the problem of the soil could no longer be ignored.

Again, the tragedy led to determined action on the part at least of some of the people who were affected. Groups, for example in western Texas, petitioned their legislature for the authority to

OPERATION OUTDOORS

TO MEET the rising need for sufficient outdoor recreational outlets, the Forest Service has designed a five-year program for the development of recreational facilities on the national forests. This program is entitled *Operation Outdoors,* and it deserves full public support.

Scheduled to be completed by 1962, at an estimated cost of $85 million, Operation Outdoors aims at putting existing facilities in a safe and sanitary condition and providing new facilities to accommodate the 66 million recreation visits expected annually by 1962.

Present facilities of national forest recreation areas are inadequate to accommodate present and expected use. Most of these facilities were built in the 1930s by the CCC, and have been deteriorating under excessive use. The Forest Service has not received sufficient funds to maintain these areas or to provide for increased use.

In 1955, over 45½ million people visited national forests for recreational purposes, four times as many as 20 years ago. In that year, facilities at camp and picnic areas had a safe capacity of some 17.6 million man-days' use per season, but actually received 25.5 million man-days' use—an overload of 39 percent. If this situation is not rectified, the Forest Service expects an overload of 61 percent by 1958.

This overcrowding of recreational areas actually threatens public health and safety. Overloading of developed areas and the resultant use of unimproved areas endangers the water supplies of nearby towns and cities, constitutes a fire threat to valuable stands of timber, pollutes streams and lakes, and can spread human diseases and forest fires.

However, through Operation Outdoors the Forest Service plans to 1) catch up with rapidly increasing use of national forests for general recreation; 2) adequately correlate management of the recreation resource with the expanding use of other resources; and 3) develop additional recreational facilities to supply the demand as an integral part of a multiple-use program. Rehabilitating existing recreational facilities so that they will be safe and usable, and planning, developing, and installing new areas to alleviate present overuse and accommodate future use as it develops are the goals Operation Outdoors hopes to accomplish by 1962.

Operation Outdoors was formulated from the Forest Service's field survey of all national forests to determine 1) condition of present areas, facilities and rehabilitation needs; 2) new facilities needed to accommodate present use in a satisfactory manner; 3) new facilities needed to accommodate expected future use, up to the end of fiscal year 1962; and 4) level of planning, supervision, and administration and maintenance of facilities needed to adequately handle the present and expected recreation use during the five-year period. From this survey not only the needs were revealed, but the cost of such a program as well.

This five-year recreation plan was released following the President's budget message to Congress, in which he recommended $11.5 million for public recreation use on the national forests, which is the amount shown in the report for fiscal year 1958. Although the total cost of Operation Outdoors is estimated to be $85 million, the Forest Service has requested only $11.5 million to initiate the program in fiscal year 1958. In the succeeding years of the program $15.5 million, $19.5 million, $19.5 million, and $19.0 million respectively will be requested. It is estimated that the cost of the recreation program for the subsequent five-year period will level off to an average annual expenditure of $12.5 million, as compared to $17.0 for the current program.

Under Operation Outdoors, the chief of the Forest Service will allocate the appropriation to the regions on the basis of recreational workloads and needs. The regional forester will then distribute the funds to the national forests in his area on the same basis of workload and need. Actually, the regional forester will direct and guide the forest supervisors in deciding upon the program of work, the priorities and the types of facilities needed, in accordance with the principles and policies outlined in Operation Outdoors.

organize themselves to combat wind erosion and requested that experts be sent to advise them. This technique not only was successful there but set a pattern which, with modifications, was later adopted widely over the country in the form of soil conservation district laws. Although this ghastly cycle of speculative wheat growing and succeeding dust storms has once more made its full turn it is some satisfaction to record that impact of the latest dust storms is much less marked in those places where people determined during the last ones to remain and fight it out in an intelligent and cooperative way. So much for the grasslands.

In 1938 I returned to my native state of Ohio, seeing some new problems and also viewing some of the older ones through new perspective. One of the problems encountered almost immediately was in Lorain County where Oberlin College is located and where I lived. Lorain County receives some 40 inches of rainfall each year, amounting perhaps to some 14,000 tons per acre. Although this sounds like plenty of water we found that a high percentage of the farmers in this county were actually buying water from municipalities—a fact borne in on me because I lived near one of these reservoirs and the tank wagons rumbled past our house day and night. Many farmers were paying as much as $300 a year to purchase water to carry on their farm operations in spite of the relatively abundant rainfall. The reasons for this situation are not simple, but a few of them are fairly obvious.

When the state of Ohio was opened for settlement during the 1780's a new experiment in land subdivision was inaugurated. Instead of the old winding roads which followed the pattern of topography, a geometrical system of grids was established with roads north and south, east and west, at every mile. This added greatly to the convenience and simplicity of describing and subdividing the land. It also offered some obvious conveniences in the matter of location of the traveler and directness of travel. (It was not completely successful in the latter respect, however. A highway map of Ohio reveals that while the rectangular system of roads still remains, many of the great trunk lines that carry a large proportion of the traffic are along the old Indian trails which in turn are based upon topography.)

The point, however, which interests us now is that a highway is not merely an avenue for travel, it is also of necessity a line of drainage. The original drainage of the state, of course, was that of the leisurely, winding streams that moved the water away rather deliberately, giving it some opportunity to soak in. When the grid of artificial drainage ways was established its effect was to hurry the water off the landscape as rapidly as possible, thus reducing its effectiveness in sustaining life on land since this depends largely on the slowness of its return to the ocean. To make matters worse, it was found that some 20 per cent of the area of Lorain County slopes directly into highway ditches. This, of course, represents a considerable initial discount on rainfall, particularly since the land itself had become somewhat impervious to water. Unfortunately many of our agricultural practices tend to lower the capacity of the soil to absorb moisture. This was certainly true in Lorain County.

One of the most dramatic examples of the effect of agricultural practice on water absorption is to be seen at Seabrook Farms in New Jersey. Here is an immense establishment devoted to the growing of vegetables for canning and freezing. In processing these vegetables wash water in the amount of some 8 million gallons has to be disposed of daily during the season. This water is greenish in color and has too high an organic content to be safely dumped into the small streams where it would cause pollution and undesirable conditions. On the other hand, the organic content is not high enough to permit industrial salvage. At first, efforts were made to spread this water either by flowing or spraying it out onto various types of agricultural land—pasture, crop land, or plowed land. Although this soil is a loose, sandy type, in every instance it soon sealed up and refused to take any more water. Then the company, on the advice of its consultant Dr. Thornthwaite, began to spray the water out into the woods where the soil profile is reasonably undisturbed. Surprisingly, these woodland soils absorbed all the water put on them, in some cases an amount equivalent to 500 inches of rainfall per year. This has been going on now for several years with no sign of decrease.

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The contrast between natural and agricultural soils may have been unusual at Seabrook Farms, but the principle applies widely. So far as northern Ohio is concerned, the records show a marked drop in farm yields not long after clearing, when the tree roots had decayed and the soil became compacted. But regardless of local variations, enough has been said to show how the by-products of engineering and agricultural practice may lead to water shortage in spite of abundant rainfall.

Returning to the situation in Lorain County, the obvious and immediate step was to store some of this rainfall in ponds. Ponds had been tried, but because of faulty design with little success. Thanks to the enterprise of a utilities executive, the engineers and contractors of the county were assembled and given a briefing on proper pond construction. Then the farmers were informed that for little more than the price of a two-year water bill, they could have good ponds made by local private enterprise. Within a short time some dozens were constructed, and the number is growing

As an immediate benefit, insurance rates go down when a pond is at hand. I recently saw one of the earliest of these ponds and learned that it has supplied abundant water for more than a decade, in addition to fishing and swimming. The owner also informed me that the level in his well, a hundred yards or more away, has risen to that of the pond. The same is true of the general water table nearby.

It is appropriate at this juncture to emphasize the part played by a representative of corporate business in this matter. This is not an isolated case. There is good reason to believe that as American business and industry have expanded into larger units, they have begun to take a more responsible attitude toward natural resources. They no longer measure themselves in terms of the lifetime of a single individual. Of necessity they are now concerned with a continuing supply of raw materials, as well as with maintaining a high general level of prosperity. The conservationist has certainly found staunch allies among businessmen. In Oklahoma they lent their support to the passage of good soil conservation laws, and in New England backed a study of the Connecticut Valley, whose great river is an economic artery of that area.

Another interesting development of recent years in Ohio has been with respect to wildlife and fish management. Since statehood this had been one of the most vexing and recurrent problems facing the legislature. Scarcely a session passed without considerable time being taken up to work out some kind of remedy for the steady depletion of wildlife and fish. Many expedients were tried including regulation of seasons, bag limits, fish hatcheries and game farms, all to no avail. Meanwhile, of course, biologists were thoroughly convinced that the trou-

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Sitting Tall in the Saddle

January 1, 1956 — Rose Parade traffic patrol... February 6, 1956 — Flew heart attack victim from Wilson Canyon... February 10, 1956 — Reseeded La Tuna Canyon area... June 12, 1956 — Search and capture of armed gunman in Newhall Hills after suspect shot motorist... December 26-30, 1956 — Malibu fire, 40,000 acres burned, $70,000,000 damage.

Those terse statements taken from daily log sheets tell of the exciting accomplishments of the Los Angeles County Sheriff Department's Bell 47G-2 helicopter... accomplishments such as the briefly noted Malibu fire where the Bell helicopter performed heroically, flying fire-fighting crews to critical areas, bringing in needed supplies and reporting progress against the fire to fire headquarters.

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(*From page* 19)

in his own mind that he can take a scale stick and talley book in hand and put in a creditable day's work. Also, more and more we are looking for foresters versed in specialized techniques— such as photogrammetry.

"We would like to take for granted that the graduating forester possesses the skills that make him a forester and that those skills rest on a sound foundation of basic sciences. We would also like to take for granted that the beginning forester is a man with cultural and educational background that will make his relationships with his fellow men effective. As the young forester moves up the echelon, he soon learns that he deals more and more with people and less and less with trees. Tomorrow's foresters, in our opinion, need to place more emphasis on the general use of English, whether written or spoken. Report writing is an important part of business. Concise, well-written reports that say it quickly and efficiently with an economy of words are certain to attract favorable attention from a busy management. By the same token, the forester who can present his case on his feet in a convincing manner, has a distinct advantage.

"I would also strongly urge that prospective young foresters develop 'cost awareness.' Frankly, many foresters who have come to us up to this time have lacked this important asset. If the young student pursuing his forestry school work could train himself to ask 'cost' questions he would enhance his potentialities. Costs of sawing-for-grade, the cost of access roads, the operating costs from the growing of trees through the harvesting and utilization phases— these are matters of concern to the forest industries, I can assure you. A knowledge of basic bookkeeping procedures is also needed for intelligent fiscal planning. And another angle of forestry training too little emphasized in the past is the impact of government on business as for example the effect of income tax and its ramifications on acquisition, depletion records and appraisal work.

"A lot to learn, you say? Yes, but well worth it for the young man *who is determined to grow* with the industry. In this connection, it might be of interest that the Chairman of the Board of International Paper is a forester."

James C. McClellan, assistant managing director, AFPI — "The basic requirement for any forester, regardless of his employment, is that he be well-grounded in his forestry training. It goes without saying that his employer will expect him to handle such routine jobs as tree planting, surveying, timber cruising, mapping and scaling—all without additional training. On the other hand, when a young forester applies for a position with a forest industry there are certain characteristics and qualifications in which the industry is particularly interested. The industry expects him to be physically strong, intelligent, honest, reliable, of high morals and neat in appearance, but it is particularly interested in other traits and abilities. Industry expects him to have the capacity for enthusiasm in his work and to be deeply interested in his job and its opportunities. He should have a good sense of economics, and, above all, he must have sound judgment and common sense. He must be able to meet and work with other people and have a sympathetic understanding of other people's viewpoints. He should have the ability to fit himself into his community as a good citizen. He should be able to win friends for his company in his daily contacts. He should have the ability to teach and lead other people. Industry is always looking for foresters who have 'sales ability'— not ability to sell products, but to sell ideas. The forester with good technical training who can express himself clearly and forcefully both on his feet and on paper will always find a place with industry, and for that matter, in other forestry fields. The successful industry forester should have breadth of vision— the ability to see ahead, *to grow with his company* and his industry and to keep abreast of technical and public relations developments within the industry and related fields.

"As old timers will agree, these requirements for a beginning forester today are a far cry from the 'good old days' when the examination for Forest Ranger consisted of demonstrations of the applicant's ability to tie a diamond hitch on a pack mule and ride a horse!"

Corydon Wagner, vice president, St. Paul & Tacoma Lumber Co.—"The field of forestry beckons to young men of enthusiasm, energy, and talent. Since earliest Colonial days forest industry has been a substantial contributor to the economy of the country. Only recently, however, has the realization developed that, under enlightened management from woodland to factory door and modern technical 'know-how,' forest industry of ever enlarging scope and integration, can not only be maintained indefinitely, but has a potential for expansion that is seemingly unlimited.

"Few professions seem to offer more opportunities for capable young men than forestry.

"Forestry is a challenging profession with many diverse lines of application and interest.

"Its first concern—forest management — the growth and regrowth of one of the world's most versatile materials— wood —is being carried on today as a multi-purpose endeavor in the knowledge of a responsibility that bears a deep public interest, such as protection from fire, erosion, watershed misuse, and the cultivation of wild life, and recreation of the individual.

"Forestry is concerned, also, with production—the direction of labor, and the manufacturing of lumber, pulp, paper, plywood, and a myriad of other less well known products. It is concerned with wood technology to find new and better uses of this basic material and improved quality of the tree and stand.

"The merchandising of an infinite number and variety of wood products, to bring better understanding of their qualities and possible uses, for engineers, architects, builders, and consumers, is another side of a forester's career.

"Based on a self-renewable resource in an environment which has no peer in its wholesomeness and healthy atmosphere, forestry can be a soul-satisfying profession. It is an antidote to boredom and monotony."

Earl J. Thomas, director, Bureau of Land Management — "It goes without saying that one of the first qualifications required is technical proficiency. A degree from an accredited forestry school should provide the necessary professional background and additional skills can be acquired according to the demands of the employer.

"Initially, at least, much of the new forester's time will be spent on hard exacting field work. Besides normal physical strength and endurance we would like to hire cheerful, energetic and persevering young men who are enthusiastic about their work and loyal to the organization. A qualification of great importance in the man we seek is one whose personal integrity can not be questioned.

"A highly desirable trait is the capability of expressing an opinion both orally and in writing. Also highly important is the work with others. Foresters who, over a period of years, display outstanding qualities of leadership and organizational capabilities, along with a capacity for self improvement, and who have the potential to fill high administrative positions, would be a welcome addition to the organization."

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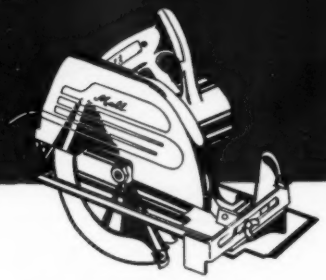

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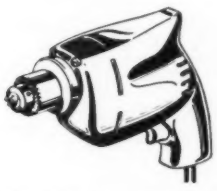

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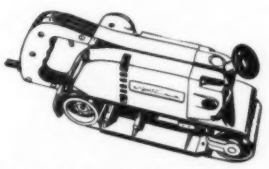

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Manpower Shortage In Forestry

(*From page* 12)

some doubts. The trends show that numbers of forestry degrees have dropped off more rapidly than in engineering and many other fields. Indeed by the spring of 1955 engineering graduations began an upswing, although forestry continued to decline. Total enrollment in forestry did not begin to climb again as soon nor has it climbed as fast. Freshman enrollments in forestry are increasing, but not as rapidly as in engineering. Engineering schools in 1955 admitted more freshmen than at the peak of the post-war veterans surge; forestry was considerably below that peak.

These differences may be partially due to the vigorous recruiting campaigns to bring more young men into engineering and the physical sciences. Both in campus newspapers and the public press young men are constantly reminded of the many openings, the fascinating nature of the work, the pleasant working conditions and the attractive salaries in engineering jobs. While forestry needs its share of men with the ability to handle complex technical work and to carry responsibility, few parallel efforts are being made to attract ambitious and capable young men into forestry. Considering current shortages and the predicted future increases in demand for foresters, it seems doubtful that forestry is now attracting talented young men as rapidly as they will be needed.

Do foresters stay with the profession?

Before launching into a recruiting campaign, supporters of forestry may well inquire as to whether the current shortage is due to men trained in forestry entering other lines of work, either just after leaving college or after a try at one or two forestry jobs. Everyone in forestry work knows men who have made such a change, especially during past periods when forestry jobs have been scarce and in areas where foresters' salaries have been low.

At some forestry schools recently a small but noticeable percentage of graduates have been going into work perhaps distantly related to forestry but not in the forest management field for which they were specifically trained. The shortage of engineers and the higher salaries in this field have drawn some graduates to work in photogrammetry, road planning and construction, mapping, and other work for which forestry training has equipped them. Also some have been attracted by the high salaries in selling forest-related products such as tractors, chain saws, wood preservatives, millwork, and dozens of wood products. These men have been trained to fill the types of jobs in which current shortages exist.

An effort was made to determine what percentage of forestry school graduates stay in this line of work. There is some variation among schools, and the problem of job-classification precludes a clear-cut picture. However, an estimate from rather sketchy data indicates that probably 80 to 90 per cent of the graduates of forestry schools remain in jobs more or less related to forestry. Perhaps 50 to 60 per cent are employed directly in forest management.

The worst period for trained foresters leaving the field was in the late 1930's and early 1940's when the CCC Program was being tapered off just as the great numbers of forestry

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Texas Calls Fire Parley

Louisiana airlifts 420 citizens in new fire study effort. Florida conducts three fire conferences simultaneously

Texas, which had more wild forest fires in 1956 than any other year since 1939, has called a Texas Forest Fire Prevention Conference for this spring. R. M. Townsend, president of the Texas Forestry Association, has announced that Marvin Angle, of Nacogdoches, will be chairman. The Texas meeting will be a followup on the Southern Forest Fire Prevention Conference of last April in New Orleans which was attended by 85 Texans. Purpose of the Texas conference will be to focus attention of Texans on the seriousness of wild fires in the forests.

At a Louisiana fire conference last month, the Louisiana Forestry Association airlifted 420 business, public and civic leaders over the state's forests in a renewed effort to study the fire problem. Scene of that state's first followup conference on the New Orleans meeting was Minden where C. O. Holland, president of the People's Bank and Trust Company, urged citizens of the state "to stand up for justice in forest fire prosecutions."

Holland nailed down two major roles the public must play if the forestry program is to succeed: 1) To cement a militant public opinion in favor of forest fire prevention in every area and 2) to encourage all law enforcement officials to take stern action toward those who burn the woods.

C. H. Jeter, chairman of the Louisiana Forestry Commission, added another recommendation: "To maintain the strong forest fire protection agency embodied in the Louisiana Forestry Commission and demand that adequate protection be afforded the entire state."

State Forester Jim Mixon reported that while the average size of forest fires has been cut down by 50 percent in the last 12 years, the state, nevertheless, has more fires today than previously. Reason is that "we now have a whole lot more people roaming around more and a lot faster!"

On the law enforcement picture, Mixon said that one out of every five fires in northwest Louisiana was investigated by law enforcement agents of the commission last year "and an arrest was made two out of three times." The fact that forest landowners have now put additional firefighting crews into the fray is also helping to bolster the cause of law and order, Mixon said.

In another development, the Florida Forestry Association was sponsoring three simultaneous fire conferences in that state last month; but details were not available as *American Forests* went to press.

students attracted by the CCC Program were getting their diplomas. In describing this period, Mr. Frank H. Kaufert, director of Minnesota's School of Forestry, wrote recently,

> "This situation resulted in one of the most difficult employment periods in the history of forestry —a period during which there were few jobs and many graduates.
>
> "While the CCC Program made many valuable contributions in terms of forest planting, timber stand improvement and other projects, it nearly wrecked the forestry schools and did serious damage to the entire profession as far as its employment reputation was concerned. The unfortunate employment that prevailed in the late 1930's and early 1940's still is the basis for discouraging interested and qualified young men from entering the profession."

Turnover among employed foresters, that is, percentage of men leaving jobs each year, seems to have been quite low in recent years. A scattered sampling of industrial, federal and state organizations shows a turnover rate varying from zero to nine per cent, with an average around five per cent. The great majority of those leaving take forestry employment elsewhere or enter the armed services A comparative figure from a large sample of employers of engineers showed a turnover rate of nine per cent in 1955.

In summing up the significance of foresters shifting to other lines of work, the conclusions seem justified that forestry graduates stick with their profession as well as or better than men in other fields, but that a small additional number might be retained in field forest management jobs by higher salaries and better working conditions.

What about salaries?

Foresters' salaries have been a deterring factor in attracting men, but recent increases in starting salaries have made substantial progress toward allowing forestry to compete on a more equal basis with other professions. These increases are too recent and too little publicized to have had a significant influence on enrollment trends. The older idea of keeping starting salaries low to test a man's real liking for forestry work is giving way to the recognition that reliable and skilled men can only be attracted and retained by a job that enables them to maintain a satisfactory family life.

The most significant improvement in salaries has been the establishment within the past few months by the U.S. Forest Service, following the lead of the Bureau of Land Management, of a starting salary of $350 per month. After one year of satisfactory service the salary increases to $410 per month. Starting salaries in industry and state service seem to range from $320 to $400 per month, with state forestry agencies more frequently in the lower part of the range. For comparison, current starting salaries for 4-year engineering graduates seem to be in the range of $400 to $425 per month.

A fair picture of forestry salaries would show that, in spite of limited opportunities for advancement in many forestry organizations, there are some very tempting salaries available in the field for men with initiative and leadership ability. A district ranger on a national forest receives from $450 to $620 per month under the new pay schedule, and a national forest supervisor might receive over $800. A 1953 survey by the Society of American Foresters showed that twelve per cent of its members were receiving between $620 and $830 per month, five per cent between $830 and $1250 per month, and two per cent over $1250 per month.

What needs to be done?

Although rising salaries may help, many other things need to be done to alleviate the shortage and to meet steadily rising employment levels. Some government agencies are already modifying civil service programs to make employment less complicated. Civil service examinations are being given more frequently. States are accepting out-of-state residents in examinations, and expanding numbers of sub-professional jobs to give foresters more hands and feet. The U.S. Forest Service is instituting a Student Trainee Program to allow forestry school students to attain civil service status as soon as one college year is completed. By working regularly during summers the student in this program can steadily move up to attain a professional forestry position upon graduation without taking further tests.

More active programs are needed to place good information on forestry opportunities before young men of high school and college age. Possibly advertising is needed to counterbalance the glamorizing of engineering. Someone could well undertake a project of screening the published material on careers to see that it

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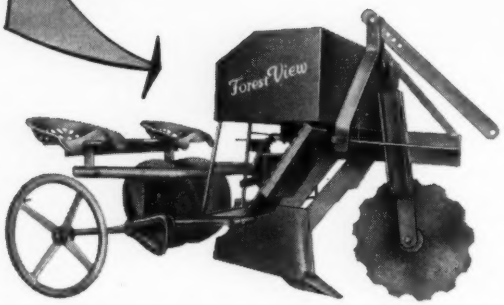

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3-57

gives a true and up-to-date picture of forestry. A recent look at a typical shelf of career materials shows much old material giving very low starting salaries, and the main requirements for foresters as a robust physique and a love of the out-of-doors. A book on careers published in the last year briefly describes forestry at the end of the section on "opportunities in agriculture" and makes no mention of it in the chapter on "opportunities in the professions."

Some local groups of professional foresters are cooperating closely with high school authorities in familiarizing career counselors with forestry and in changing some romantic ideas. More of this is needed, and perhaps some assistance from a national organization is called for. Cooperation is certainly desirable with other groups in urging adequate preparation in grade school and high school so that more students can successfully complete collegiate technical training. Finally the need should not be overlooked for more scholarship aid at the freshman and upperclass level and for aids to students who must pay higher nonresident tuition fees.

Each employer of foresters should perhaps consider the long-range effects on recruitment of the living conditions and opportunities for advancement in his forestry staff. It is known that a strong factor in the career choice of a young man may be the desire to emulate some successful person in his own community. Areas where many foresters work may be examined to see how many forestry students they are producing. Also training beyond the bachelor's level might be given some consideration. Except in research and teaching, employers of foresters uniformly place no premium on advanced degrees and offer no encouragement for their men to get them. Employers of engineers have found that the possibility of taking advanced work may be important in attracting high caliber personnel.

Are more forestry schools needed?

In view of the fact that present enrollments are not yet up to the post-war peaks and that facilities and staffs have expanded some since that time, the establishment of new forestry schools does not seem to be necessary at this time. No extensive area of the country lacks a forestry training institution. If sizable increases are called for in the next decades, they would seem to be ob-

tainable most efficiently through strengthening of existing schools, both accredited and non-accredited.

In this period of shortage the forestry schools face a heavy responsibility to maintain and raise standards which employers of foresters have come to expect and yet turn out more graduates. The schools must also be constantly readjusting their training programs to incorporate new knowledge and new techniques. Forestry needs good men, not just more men. In order to justify higher salaries and continued advancement, foresters must be constantly developing and practicing ways of doing their jobs more efficiently. Men are needed who will not reject new ideas if the initial trial is not completely successful, but who will see what adjustments are necessary to make the idea work. With the application of aerial photogrammetry, statistical methods, genetic improvement, and mechanization of more and more woods activities, the technical demands on the field forester are becoming more complex, as are the demands on the wood products man. But perhaps most significant of the type of training needed for foresters is the ever-increasing administrative and policy-making responsibility foresters are called upon to carry as forestry organizations expand and as the public comes to recognize the diversity of products and benefits forest lands can yield. The field offers an expanding wealth of opportunity and reward for the young man with initiative and ability.

National Recreation Study

(*From page* 6)

forms of outdoor recreation, of much greater importance is their surging upward trend year after year. Recreation increased 250 percent on national forests in the past 10 years, and, a conservative estimate predicts a 50 percent increase in the next five years. The Park Service has experienced identical trends on the public properties under its administration, as have state parks and all other lands and waters available for public use. The trends are up and up again, with no one guessing what the demand will be when America's population hits the 200 million mark coupled with the very probable 4-day week.

Important as the public lands are, for the majority of Americans in the more thickly populated East,

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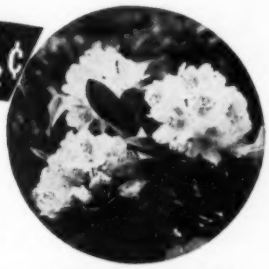

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	6 to 8 ft.	22.00	180.00
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CLADRASTUS			
(Yellow-wood)	4 to 6 ft.	40.00	350.00
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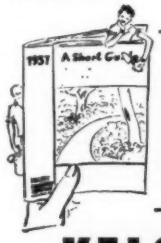

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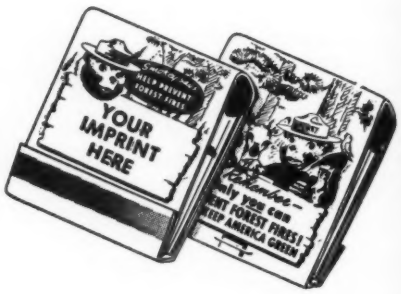

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3-57

private lands and waters are of ever more critical importance. The fact that about 80 percent of all hunting takes place on private lands illustrates the point! Hence the total problem cannot be approached nor solved alone through such programs as the Forest Service's "Operation Outdoors," the Park Service's "Mission 66" nor the Fish and Wildlife Service's recently announced 10-year program. While their contribution to the whole is immense; never-theless to a very considerable extent, these expanding programs are designed to close the gap between present demand and present inadequate recreation use facilities and opportunities.

The language of the legislation clearly does not seek to delay follow through on these programs nor to delay consideration and appropriate action on other legislation related to outdoor recreation.

Such studies as the Park Service's report on "Our Vanishing Shoreline," Bureau of Reclamation's brief inventory of recreation opportunities at reservoir areas, Fish and Wildlife Service's study of the "Wetlands in the United States," studies of River Basin inter-Agency Committees, and a wealth of individual state studies of fish, wildlife and recreation problems all give important clues to America's recreation resources and problems. Yet, we have had no attempt to integrate and correlate such data, in the light of broad, nationwide perspective, to inventory and evaluate these resources as they fill the need today and as they may or may not fill the need two or three decades hence. The legislation is designed to take the first important step toward that goal.

It is simple legislation providing for the creation of a joint Congressional-Presidential Bi-partisan Commission. Four members each of the House and Senate Interior and Insular Affairs Committees, and seven citizens including the chairman to be appointed by the President. To assist it, the commission would appoint an advisory council consisting of 25 citizens representative geographically of the major interest groups; state departments of wildlife, parks, forestry and water conservation, landowners, industry, labor, education and private conservation groups. Liaison officers from the several interested federal bureaus, such as the Forest Service, Park Service, Fish and Wildlife Service and Soil Conservation Service would also serve on the advisory council.

The commission's responsibilities, which would end on submission of its report December 31, 1959, would be: "To undertake a comprehensive inventory and evaluation of the outdoor recreation resources of the nation. It will project as scientifically as possible known trends of population and recreation habits and desires of the public in order to estimate our future needs for continued outdoor recreation opportunity. Finally it will develop recommendations for methods and programs which can serve as guides in future planning by the federal departments, states and private organizations.

"It is not the intent of the measure to duplicate programs and studies now underway by various interested agencies. The bill provides that the commission shall utilize fully all such material and data available from the federal departments, state agencies or other sources. Further, the commission is directed to make the maximum practical use of the facilities of the various states, universities and other competent groups which may best be able to carry out particular phases of the review."

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To implement that last directive, the bill provides that out of appropriations made to it the commission may make direct grants to enable states, universities, and other groups to carry out such phrases of the review as the commission determines to be desirable.

The bill does not establish a new, continuing agency of government. The commission would have no administrative authority over any agency or any program. Its responsibility would be confined to making the study in cooperation with federal and state agencies and private organizations, compile its data, evaluate and make a report of its findings and recommendations to the President and to the Congress.

Senator Watkins in commenting on the floor of the Senate stated: "This bill, if enacted, will be primarily fact finding legislation. It will set up a public bi-partisan commission to ascertain the facts of our greatly expanding outdoor recreational needs and the pressures which are building up on our dwindling resources and facilities," and "the bill recognizes the importance of multiple use of recreational resources, and of action on all levels of government."

It is interesting to note that discussions over a period of years, which resulted in the Sierra Club's proposal for a "Scenic Resource Review" have now resulted in the introduction of legislation in the California State Legislature which is parallel to the Anderson-Aspinall Bill on the state level. It is anticipated that other states will be stimulated by the federal legislation to undertake similar studies. To the extent that they may, the work of the federal commission would be made still more complete and meaningful.

The importance of outdoor recreation resources reaches directly or indirectly to every citizen. Appropriate protection and sound development of them likewise is the responsibility of all. As Senator Anderson put it :

"Implicit in the undertaking is the fact that all segments of our Nation have a big stake in the future of outdoor recreation. Cooperatively, through the suggested review, we shall be able to gain an understanding of the problems and to participate fully in planning to meet the future."

—o—

The legislation:

S-846 introduced by Senator Clinton P. Anderson (D-New Mex.) for himself and Senators Arthur V. Watkins (R-Utah), James E. Murray (D-Montana), John A. Carroll (D-Colorado), Frank A. Barrett (R-Wyoming), Thomas H. Kuchel (R-Calif.), Gordon Allott (R-Colorado), Richard E. Neuberger (D-Oregon) and Karl E. Mundt (R-S. D.). Referred to Senate Committee for Interior and Insular Affairs.

Bills identical to S-846 were introduced by: HR-3592 Congressman Wayne M. Aspinall (D. Colo.), HR-3593 Congressman John P. Saylor (R. Pa.), HR-3594 Congressman Clair Engle (D. Calif.), HR-3595 Congressman Lee Metcalf (D. Montana), HR-3596 Congressman John J. Rhodes (R. Arizona). They were referred to House Committee for Interior and Insular Affairs.

Science and Natural Resources

(*From page* 42)

ble was not to be solved in that way. They realized that fish and game, given proper habitat conditions, can take care very efficiently of maintaining their own numbers. It was not easy, however, to convince the sportsmen and the general public of this. Much credit goes for a change of the climate of opinion to such organizations as the Izaak Walton League. But a great deal of credit is due also to a practical politician who was able to speak to sportsmen in their own idiom and who had somehow come to realize that the problem of fish and wildlife administration is essentially one of wise land use. He went about the state addressing sportsmen's groups in vigorous language. Finally, due largely to his efforts, it became possible for the first time in the history of the state to place in charge of wildlife and fish administration a technically trained professional expert in these fields.

Today wildlife policy is inseparable from the management of land, being viewed in its relation to the whole agricultural and forest economy of the state. The forest management mentioned earlier is also undergoing a slow but steady transformation. The bulk of the forest land in the state is in the form of farm woodlots. For a long time these have been neglected and grazed. At the present time there is a strong campaign to eliminate the grazing. This, of course, cannot be separated from the program of pasture improvement. Many of the pastures in the state have been in as sorry

a shape as the woodlands yet capable of great improvement. As they are improved, the pressure for using the woodlands for grazing is naturally decreasing. Certain sawmills, for example, are now encouraging farmers in the vicinity not to clear-cut but only remove trees that have become ripe, ready for use, and needed in the farm operations.

The influence of the late Louis Bromfield on Malabar Farm in introducing improved methods of grass agriculture which keep the ground covered throughout the year has been enormous. These measures have certainly not solved all the land use problems. In a highly industrialized state such as Ohio, factories offer constant inducements to men who worked on farms and who much prefer the 40-hour week with high pay to the hard work which is entailed in farming. Here, as elsewhere in the country, there is no easy or pat solution to the land use problem; but it is a pleasure to note that improvements have been going on steadily.

Several years ago the various branches of government which dealt with separate resources and which were separately organized were federated into one department of state with a representative on the governor's cabinet. While this system is not perfect, its good effects are already evident and will contribute solidly to an eventual sound program of resource management in a great and prosperous state.

After a period of 12 years in Ohio it was my fortune to come East to Connecticut in 1950. Here I was able to view some new aspects of the resource problem and particularly to have borne in on me the fact that one resource very seldom mentioned as such is perhaps the basic resource of all. I refer to space. The entire area from New York up through Springfield, Massachusetts, is today regarded by planners necessarily as one great metropolitan unit in spite of the fact that there are gaps of forest and agricultural land within it. The regional planners who are working within this area are doing so under great difficulty. It is seldom indeed that a planner really has an opportunity to plan. Like some physicians, he is called in only when the patient is in grave danger and has then to improvise as best he can under serious handicaps.

I recently examined a population map of one of the New England states which the planners had prepared in which the population was indicated by dots. Viewing it as a biologist, I could not help but be impressed by the similarity of this map to a bacterial culture plate on which the colonies were very numerous and each doing its best to spread out in what is, after all, a limited and finite space. It may be that man is exempt from the limitations under which the lower organisms operate but few biologists, if any, believe this. Can human beings increase their numbers, their individual needs, their range and speed indefinitely without eventually having to come to terms with the limitations of a finite environment as other forms of life must do? Confusion of thought on this score is perhaps the major dilemma in the field of conservation.

The problem of the urgency of space in New England was at no time more vividly demonstrated than during the two floods of the past year. These were occasioned by local rainfalls of great intensity, 15 to 20 inches in a few days. Statisticians judged that such a rainfall is to be expected only once in a thousand or two thousand years, yet there were two in the same season.

When New England was settled the mills were built along the streams for a very good reason. They needed water power. But if one examines, for example, an old map of the city of Waterbury he will find that while the mills were located down along the channel within the flood plain, the residences were all

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perched on high, dry, well-drained ground. Anyone who has even a moderate interest in architecture can observe as he goes through New England that the houses which were first built were all safely above flood line. Later generations, failing to understand the meaning of the term "flood plain" (which can be obtained from any dictionary), have crowded down into the flood plain and close to the channel for housing purposes. Swamps, which normally constitute safety valves for the storage of surplus water, have been filled and covered by housing. More than this, the factories themselves have actually expanded and encroached on the channel thus increasing their vulnerability to flood damage and constricting the flow of water so that it is bound to rise higher because of the obstruction. When these circumstances are combined with the basic geology, one gets a perfect setup for maximum flood damage in case of extensive rains. For the geological pattern in many places is one of streams which flow at intervals through narrow, constricted gorges of hard rock that serve as barriers to the free flow of water.

Such are the natural hazards of the landscape that have been intensified by man's own disregard of simple scientific facts and processes that are going on constantly about us and can be observed by anyone who has been trained to see them. Yet, strange to say, most of the people affected by them are quite unaware of these phenomena. I see little prospect of permanent relief unless we can establish among the American public and its political leaders a higher standard of scientific literacy that now obtains. I do not refer necessarily to a knowledge of the more esoteric and difficult aspects of science but to such very simple matters as the conviction that two and two make four, that water runs downhill, and that two bodies cannot occupy the same space at the same time. This certainly does not seem like an unreasonable standard to meet. Yet until people begin to realize that such laws of nature operate, not only in the laboratory or the factory, but on the landscape as well, we are likely to have continuing trouble.

It seems convenient at this point to summarize the factors with which the student of natural resources must deal. For this purpose let us borrow from the mathematician. Suppose we start with a simple fraction, R/P where R stands for resources and P stands for population. This is an honest enough fraction. If there are 50 people to the square mile, space, for example, has to be apportioned accordingly. The same thing is true with the number of gallons of water available to supply a city with a population of say 50,000. Let us next use the function sign f which indicates that the fraction is related to what follows. For the final term let us use the letter C standing for culture. Here we employ the term culture in the technical sense in which it is used by social scientists to represent the pattern of behavior and the system of values which any social group, large or small, tends to hammer out as it lives together within a particular environment. The memorandum $(R/P)f(c)$ then suggests that the allocation of resources to a population is a function of the culture of that particular group.

For example, the kind of resources and the type of culture are inseparably related. To the Indian, flint was a major mineral resource. To us it means little. On the other hand the deposits of fossil fuel and metallic ores which are so essential to our civilization were not significant to the Indian culture. Less obvious but even more important—the value system of a culture determines largely how resources are handled and treated. A society may have the bohemian philosophy of chicken one day and feathers the next—use up resources, and let newcomers take the consequences. On the other hand, there are cultural groups which have an innate respect for certain resources. This is notably true of the Pennsylvania Dutch who, after a lapse of 200 or more years, are farming land that is as fertile as it ever was. The explanation is not to be found in any superior skill or scientific knowledge of these people, but in the fact that their system of values involves profound respect for the land itself.

It is, I believe, through such a respect for resources, and particularly for the intangible values of environment, that we must expect any permanent improvement in resource management. Likewise it is through our patterns of behavior and values that we must deal with the pressure of population on resources. Among the Plains Indians, for example, hunger was a frequent threat and the mother of the family was traditionally allowed to judge whether another mouth could be added to the group and fed. In Europe at the present time certain small countries are making a desperate effort to live within their finite means. This is true of the Scandinavian countries, of France of course, Ireland and Italy. The people of these countries seem to realize that they must accommodate themselves somehow to a space which will not expand and consequently are taking measures, however inefficient or imperfect, to put some restriction on the rate of population increase. Truly the relation between resources, population and culture is inescapable.

Fortunately, in the United States we

are not under the pressures that exist in many parts of the world. We still have a great margin of safety. But this, rather than serving as an excuse for recklessness in the treatment of our resources, gives us the opportunity to think and look ahead toward the time when we shall have to come to some kind of terms with our own space and resources. These, however vast, still are certainly finite. This I believe we must realize if we are to preserve our way of life with its relative freedom.

In this task it is not enough to use the scientist as a source of accurate and dependable information. All reaches of talent within the country have a part to play. There are many problems in law, in engineering, in design, fiscal and political skill to be solved. The question is how to proceed. The answer, it seems to me, is fairly simple. Begin where you live. Every individual who prizes his freedom has an obligation to learn what is going on around him, become familiar with trends, processes, and problems, decide what kind of a country he wants this to be in the long future and then work toward that end.

To a greater extent than we realize, our political and economic freedom is based upon the fact that we have had a relative abundance. If this is lost, we are bound to lose much else that we now enjoy. If we wish to preserve our freedom, we must take responsibility to see that the conditions which make it possible are continued. Here, as I have said, is a task which calls for all ranges of talent. I would be remiss if I did not further emphasize the importance of the artist in such an enterprise. It is the artist who is needed to form concepts of harmony in design, to dramatize the values of society, to help crystallize new and better ones and make them evident to others. Important as accurate technical knowledge and technological skill, skilled industrial management and political administration may be, these are ineffective unless they are blended into the common aspirations and values of our civilization.

You Can't Lick A Fernhopper

(*From page* 27)

materials needed to raise up the cabin.

Five men with power saws marched into the forest felled and bucked straight-grained Douglasfir and hauled the logs to the school's mill.

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A hundred men, in timber mechanics classes framed and erected roof trusses, in forest administration classes administered shakes to the roof, and in wood identification classes identified wood as they sawed and hewed and nailed, and all hands sang as they worked.

Three hundred willing pairs of hands gave up almost all leisure time for a school year to hammer out the fulfillment of a dream. The dream was the cabin; and so was the cabin built. Just as big as that built by the rough-barked characters in 1925? No indeed; bigger, 50 percent bigger. And despite the meanest winter in more than a quarter of a century they wouldn't be beat. Week after week they stayed with the job. Frozen fingers and nipped noses were paid no heed, and the new cabin 42 feet by 70 feet was finally completed. Everything but the wiring and the fireplace was done by forestry students, using timbers from the school's McDonald Forest, and rough lumber cut in the school sawmill. Interior finish materials were largely given by old grads and other friends in the lumber game.

Across one end of this new cabin runs a balcony, with kitchen and cloak rooms below. This part of the building is finished in knotty pine. The other end with its huge fireplace, is paneled in striated Douglas-fir plywood. The side walls are paneled with alder, hemlock, and other local woods of beauty. The ceiling is the underside of the 2 by 6 decking used for the roof, and the trusses are left exposed for interest. The cabin indeed is a building of interest and beauty, and is highly valued by the club members. Here new students get their first orientation to forestry and the life of a forester; here the club holds its meetings throughout the school year. But the cabin has greater value as a symbol than as a meeting house. It stands as a shining example of ability to do a job, of willingness to work together, and of dedication to ideals, just as in 1925.

A year of spare time from practically the entire senior class was donated to the magnificent building, with the good help of other classes along the way. The spirit of these builders is shown best by their declaration of dedication, framed on the cabin wall: "We the members of the 1949—1950 Forestry Club, builders of this cabin, dedicate it to the furtherance of democratic forestry ideals. To this end it is now and shall be a trust administered by the Forestry Club and the School of Forestry of Oregon State College. It shall be used only by such persons and organizations as are actively interested in maintaining this ideal. The Forestry Club encourages its use as a place where all people mindful of the forest may meet on a common footing. Within these walls every man shall be equal. . . ."

This is in keeping with the spirit of the school's founder and first dean, George W. Peavy. He was famous for his fierce devotion to his fernhoppers, particularly to the men who built the first cabin. He would be equally enthusiastic about their descendants today, for these men have shown that they too have the vision, courage, and intestinal fortitude of their elders. Just like the old timers, they have what it takes. They proved it in the new cabin which present day fernhoppers of Oregon State so proudly raised up from the ruins of the old, because they wouldn't be beat.

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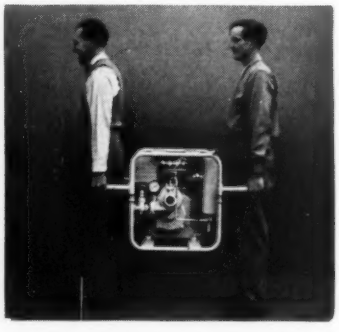

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Below—HPZF shown in action.

Largest Forestry School

(*From page* 26)

properly they were going to move the machines bodily into a new chair factory and then put in work on a new line which they were developing for chair backposts. Students were studying the action of all these machines as a part of their training.

Q. Would this new factory be on the forestry campus?

A. Oh no! This factory would be in another location—I don't know where. It might not have been in Leningrad. It could be anywhere, but it would be operated by the ministry in charge of furniture production. It would have nothing to do with the Forest Academy after it had been set up in the new place.

Q. Then you saw students studying cutting action of tools and then this line of production machinery. This was very practical research, wouldn't you say?

A. Yes, it was definitely applied research.

Q. And the mechanics there were actually working under the direction of the professors?

A. That's right.

Q. Now, when you left this laboratory, where did you go?

A. We visited a lecture hall where they had set up a movie projector and showed me a movie which had been made in December, 1955, showing some of their latest research in the field of utilization.

Q. What did you see in this movie?

A. Well, one of the most interesting phases was a movie of the cutting action of a tool as it goes through wood. This was high speed photography and of such high magnification that it showed just what was happening to the individual cells as the cutter pushed through the wood. They varied the shape and size and cutting angle of the cutter and showed what the effect was when they made these variations. You could see the individual cells crumble ahead of the cutter, or be sheared or split or whatever happened to them. It was very clear, the best thing I had ever seen of this nature.

Q. The picture was taken under unusually high magnification to be able to see the effect on the individual cell?

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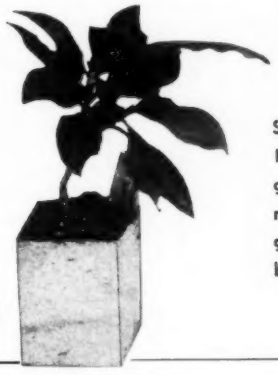

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A. Yes, it was. I believe it was at 1,000 to 2,500 magnification.

Q. Would you say this was the feature in the film?

A. Yes, I think that was the feature, though they had a number of other items in the movie. They showed the hardening of cutters by applying an electric arc momentarily to the cutting edge of a shaper blade. They showed another hardening that they were doing on the tips of sawblades. They showed an automatic assembly machine they had for the assemblying of strips of wood into core stock.

Q. Had this motion picture been taken right at the Academy of Forestry?

A. Yes, I asked them where they had taken it, and they told me they had done it there and asked me if I would like to see some of the equipment. They demonstrated most of things that were in the movie except the assembly machine which was not in operation.

Q. You saw the motion picture camera then?

A. Yes, where they were doing the research and the cutting action of cutters going through wood. They still had this experiment set up. They showed me the camera, let me look at it, demonstrated it for me, and let me take a photograph of the equipment.

Q. Let you take a photograph of the equipment?

A. Yes, that's right. There were no restrictions on photography while I was there. I took a photograph of any equipment or any thing I saw or of any people. There were no restrictions.

Q. Well, that certainly is very interesting and quite surprising. Did you happen to see any other parts of the film actually demonstrated?

A. Well, I saw the process of hardening the cutters demonstrated. They let me actually do the hardening myself and gave me the voltage and amperage necessary to do this.

Q. Was this hardening process a new one, one that you had not seen before?

A. I had never seen this process anywhere before, and although I don't know its value yet, it certainly illustrated original thinking, because I am rather familiar with the matter of the type of tools and grind used in grinding and such work, as is used in woodworking.

Q. But what was the essence of the idea used?

A. Well, they were applying an electric arc similar to a welding rod but in a different voltage and amperage; and it was applied locally along the cutting edge after it was ground which hardened the tool and they said approximately doubled the life of the cutter before it had to be ground again.

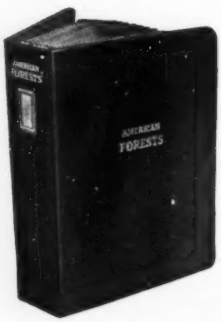
Q. Was this on solid tips or on other types of tools?

A. It was on a cutter such as a shaper—actually done on the piece of steel which was the cutting edge on the shaper.

Q. Well now, did you leave the particular building where you first visited to see some of these things?

A. Yes, there were several of them in one laboratory, and then some of the laboratories were in different buildings. The drying laboratory was in a separate building and we were shown their dry kilns where they were experimenting with high temperature drying, radio frequency drying, and vapor drying.

Q. As you went from one building



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to another, did you go across an open campus?

A. No. Between the buildings we went through a beautiful snow covered college forest which consisted of both hardwoods and softwoods. I didn't particularly identify them because they were covered with snow. There was about three feet of snow on the ground at that time.

Q. Did you gain the impression there were several acres of forest altogether?

A. Oh yes! There were a number of acres, but how many I don't know because it extended off into the distance and you couldn't see how far it went.

Q. So you traveled through this woods and three feet of snow to get from one building to another. What was your impression of the number of buildings making up this forest academy? Was there a dozen or more?

A. Yes, there may have been more than that. I don't know because I only visited the ones that were concerned with utilization and did not visit any of the management buildings or laboratories or the wood chemistry department or laboratories.

Q. Did you gain the impression that the government primarily was enabling these students to continue their work at the Academy?

A. I was told that 97% of the students were on state scholarships.

Q. Ninety-seven percent! That's very high percentage! What requirements were expected of the students?

A. Well, I was told that in order to keep a scholarship—they had different types—that if a student had the equivalent of an A minus average he would receive his board, room, tuition, and books, *plus a salary* equivalent to a factory worker. But if he only maintained a lower average, such as a B average, why his salary would be reduced to perhaps 1/3. And if his grade went too much lower, then he would be expelled from the school and assigned to work in a factory; and that would be his work from then on.

Q. As an A minus or B government student he got his board, his room, instruction tuition, and so forth, and you say, a salary in addition?

A. A salary, though I'm not sure exactly how much.

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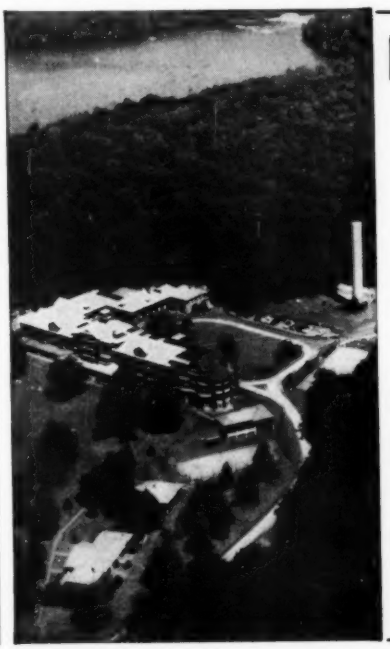

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Q. What opportunity would there be for these forestry college graduates?

A. Well, Mr. Carlson, I was informed that all Soviet technical and management positions in the future are going to be filled from graduates of the technical schools, and that as soon as the men and women graduate they will be assigned to jobs in technical or management positions.

Q. What was your impression about the amount of salary paid the professors and instructors in the school?

A. Well, I don't know about the instructors and lower ranking men, but the department heads, both professors I met, apparently received salaries which had a purchasing power greater than a comparable professor in the United States. All these men were very well dressed. A number of them had houses in the city and houses in the country and a chauffeur driving for them and for their wives.

Q. Then there was a clear recognition of the importance of the faculty as key men in training students who would later fill the management and technical positions in the Soviet Union program.

A. Yes. The Russians are very short of technical people. Their system of production is such that it requires technical people in all phases. Because they are short of technically trained men the people who are training them are very much in demand. They apparently are paying directly in proportion to their need in the Soviet Union.

Q. An important question here, Mr. Johnson—did you gain the impression that it was necessary for a head of a department or for all the professors to be members of the Communist party in order to carry on their work?

A. The head of the university told me that was not necessary. He stated that he was a member of the Communist party himself. I inferred that it would probably be necessary to be a member of the Communist party to become head of a university though I was not told this directly. However, the director told me that among his department heads, some of them were members of the Communist party and some were not. It was not necessary for them to be Communists in order to hold their jobs. There was no difference in their pay scale.

Q. Mr. Johnson, what do you consider were the high points of your visit to the S. M. Kirov Academy of Forest Technology at Leningrad?

A. That there are more than 4,000 forestry students at the Academy, both men and women, training at the professional level in many phases of forest growth and use, for important technical and management positions in the Soviet Union; and that their forestry education and research were equal to the best that I know of in the Western world.

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Forestry As A Career

(*From page* 17)

in this wide field of professional work lie in his own ability and the interests and scope of activity of his employer.

Usually the industrial forester is a timberland manager and has a great deal to do with planning or supervising logging or pulpwood cutting. He must know how much and what kind of timber is on the land and how fast it is growing. He must protect the timber from fires, insects, diseases and theft. He must plan when, where and how much to cut. His primary job is to supply the mill or plant with a continuous supply of wood while maintaining and improving the ability of the forest lands to grow wood. This is a job that uses every phase of forestry knowledge.

Foresters in industry, however, are found in numerous capacities not directly related to technical forestry work.

Some employers have found that an education in forestry fits their employees for a variety of jobs. Such employees may be in the selling end of the business, or engaged in buying raw material for the company from farmers and individual landowners, or concerned with manufacturing processes.

A number of foresters are engaged in executive and public relations capacities for organizations made up of industrial firms. Still others find outlets for special interests and talents with citizens' conservation associations, and with publishers of trade periodicals, or "outdoor" magazines. Some positions seem far removed from the job of woodland manager or forest fire fighter, from the life of the lonely timber cruiser, but each in its way contributes.

Salaries in private and industrial work cover as wide a range of possibilities as does the nature of the work itself. Graduates just out of school can expect from $3600 to $4500 per year. Positions of increasing responsibility offer salaries of $7500 upward for foresters in charge of large company forests. The limited number who attain executive positions in land management or wood procurement range in compensation from $10,000 to $15,000 annually. Foresters who become officers of corporations are paid in accordance with the importance of the position, from $15,000 upward.

Foresters in industrial work often find that to their salaries are added various fringe benefits such as a rent-free house, the use of company-owned transportation, fuel, the privilege of commissary buying, and participation in insurance and retirement plans.

Self-employment.—1. Forest Consultants. Of increasing significance in the field of employment for foresters is consulting work. In this the professional forester advises and assists private owners, individuals or companies, and occasionally public owners, in timber management plans and practices, in making appraisals, marketing timber, studying investment possibilities, and numerous related matters. Some consultants operate alone as individual practitioners while others have formed corporations or firms. Some consultants are permanently engaged on a retainer basis by landowners to direct the management of timber properties. There are nearly 200 individuals and firms listed as forest consultants in this country, and it is probably the field of employment in which potential enlargement is proportionally the greatest.

Successful consulting foresters have usually entered the field after acquiring considerable previous experience. It is not wise for a young graduate to embark directly into the work on his own, and usually not financially possible. He should first acquire wide experience in public or private work, or should join the firm of an established consultant.

Earnings in this field are in proportion to the degree of success attained. Depending upon his experience, and the service he renders his client, the usual fee varies from $30 to $100 per day.

2. Private Business. Some foresters are engaged in the business of operating nurseries for the sale of forest and ornamental planting stock, others operate wood processing plants, or engage in various aspects of the wood-using industries. The operation of a portable sawmill on a contract basis with small timberland owners is a common business activity of foresters.

3. Tree Farming. Because of the large investment involved it is seldom possible for an individual forester to own a sufficient amount of forest land to be able to secure from it his entire livelihood by the harvest and sale of timber products. An additional deterrent to land ownership is the lack of permanency of residence typical of some types of employment. Many foresters, however, own some forest land and reap both profit and enjoyment from its management.

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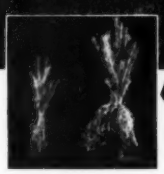

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3-yr. Seedlings, 8" to 14" 50.00

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profession in the field of natural resource conservation, it is not surprising to find many foresters working in fields allied to forestry. These include wildlife and range management, erosion control, some types of engineering, park development and planning, shade tree and landscape work.

An additional important allied field to forestry is in wood technology, which is concerned with the physical and chemical properties of wood and which applies knowledge of them to bring about fuller utilization and new uses of wood. Men in this field work as wood architects, timber engineers, wood chemists, plant managers of lumber mills or pulp and paper plants, and technicians in various capacities in the wood using and wood processing industries.

Education and Training

College training in forestry leading to a degree is required of the professional worker. Advanced or graduate degrees are necessary in some fields of work and helpful in others.

Specialization in high school is neither necessary nor desirable. The prospective forester should acquire as broad a cultural background as possible. Certain subjects, however, should be taken. These include chemistry and physics, biological sciences, English composition and literature, public speaking, and all the mathematical courses offered.

College training in forestry consists of a foundation of scientific, engineering, economic, and social studies after which technical training in five general fields is given. These fields are silviculture, forest management, forest protection, forest economics, and forest utilization. They have been set down by the profession as essential in the training of prospective members and are defined by the Society of American Foresters as follows:

"SILVICULTURE is the art of producing and tending a forest; the application of the knowledge of silvics in the treatment of a forest, which must be based on plant ecology, botany, plant physiology, dendrology, and soils.

"FOREST MANAGEMENT is the application of business methods and technical forestry principles to the operation of a forest property.

"FOREST PROTECTION includes all those activities connected with the prevention and control of damage to forests from fire, insects, disease, and other injurious and destructive agencies.

"FOREST ECONOMICS treats of forest management as an enterprise for realizing individual and social gains. It deals mainly with costs and returns, both financial and other, of forestry as related to public policies, business conditions, and marketing practices, and to the character, ownership, and operation of the forest.

"FOREST UTILIZATION is concerned with the operation of harvesting and marketing the forest crop and other resources of the forest."

Professional education in forestry in the United States began near the turn of the century with the establishment in 1898 of the Biltmore Forest School in North Carolina, and the State College of Forestry at Cornell University. Both of these schools were subsequently discontinued so that the oldest school in continuous existence now is the one at Yale University, which came into existence in 1900.

The Society of American Foresters has a permanent standing Committee on the Advancement of Forestry Education which periodically examines institutions offering professional forestry training. From this examination is compiled a list of accredited schools. The accredited institutions meet training standards which warrant the admission of graduates in approved curriculums to membership in the society without further proof of competence. The term "approved curriculums" defines a body of instruction containing the five courses of silviculture, forest management, forest protection, forest economics, and forest utilization.

The Journal of Forestry annually publishes statistics from the schools of forestry. The number of undergraduate degrees granted, excluding the years affected by the two world wars, has fluctuated somewhat but has shown a steady overall increase; one in 1900, 160 in 1920, 1,072 in 1940, 2,321 in 1950 (the

Financial Statement, The American Forestry Association

BALANCE SHEET AS OF DECEMBER 31, 1956

ASSETS		LIABILITIES AND SURPLUS	
Cash	$ 68,333.89	Accounts Payable	$ 6,797.74
Accounts Receivable	2,581.90	Other Current Liabilities	1,486.00
Inventories	16,249.20	Due Endowment Fund Advance	15,492.03
Furniture and Equipment (Net)	1,644.94	Deferred Income	102,314.12
Other Assets	709.28	Endowment Fund Liabilities	44,390.66
Endowment Fund Assets	324,422.07	Surplus	243,460.73
Total	$413,941.28	Total	$413,941.28

INCOME AND EXPENSE ACCOUNT FOR THE YEAR ENDING December 31, 1956

EXPENSE		INCOME	
Membership	$ 51,406.27	Membership Dues	$156,730.84
American Forests Magazine	132,129.05	Advertising	63,446.24
Sales	11,863.04	Sales	20,945.87
Trail Riders	56,016.56	Trail Riders	59,920.00
General Administration	54,204.01	Contributions and Bequests	20,742.90
Forester's Office	13,803.31		
Total Expense	$319,422.24		
Excess of Income over Expense	2,363.61		
Total	$321,785.85	Total	$321,785.85

In our opinion the above condensed Balance Sheet and Income and Expense Account, fairly present, respectively the financial condition of The American Forestry Association at December 31, 1956, and the results of its operations for the year ended on that date.

SNYDER, FARR AND COMPANY
Certified Public Accountants

peak year, but influenced by the number of war veterans) and 1,000 in 1956. The annual number of graduates, in general, has been rather well balanced with the opportunities for employment until recent years when the demand for trained foresters has exceeded the supply.

There is a growing tendency to encourage professional students to acquire a fifth year of graduate study leading to the master's degree. Although not essential to entrance into the profession, the widening range of technical knowledge required, together with the amount of basic education necessary in order to give well rounded training, has made a fifth year desirable. As previously indicated, the master's degree is essential in teaching or research and the doctor's degree is highly desirable.

Thirty-eight colleges and universities in the United States offer instruction leading to a forestry degree. Of these, 26 are accredited by the Society of American Foresters. Various other colleges offer courses in forestry, but not a degree in the subject. Two ranger schools provide training at the vocational level, fitting their students for work in applied forestry but without giving the wider scientific and cultural foundation generally considered necessary in professional training. The colleges and universities offering instruction in forestry are listed in Table 2.

Scholarships and fellowships of various kinds are available from most schools. They vary from small annual amounts to substantial contributions toward an undergraduate degree or toward graduate training. A number are financed by endowments or by direct awards from individuals and industrial organizations. Interested persons should make direct inquiries to the schools of their choice as to course of study and financial aids available to qualified students.

TABLE 2

COLLEGES AND UNIVERSITIES IN THE UNITED STATES OFFERING INSTRUCTION IN FORESTRY (MAY 1, 1956)

Accredited

The following institutions are accredited for forestry instruction by the Council of the Society of American Foresters.

Alabama Polytechnic Institute, Department of Forestry, Auburn, Ala.

University of California, School of Forestry, Berkeley 4, Calif.

Colorado A & M College, School of Forestry and Range Management, Fort Collins, Colo.

Duke University, School of Forestry, Durham, N. C.

University of Florida, School of Forestry, Gainesville, Fla.

University of Georgia, School of Forestry, Athens, Ga.

University of Idaho, College of Forestry, Moscow, Idaho.

Iowa State College, Department of Forestry, Ames, Iowa.

Louisiana Polytechnic Institute, Department of Forestry, Ruston, La.

Louisiana State University, School of Forestry, Baton Rouge 3, La.

University of Maine, Department of Forestry, Orono, Maine.

University of Massachusetts, Department of Forestry and Wildlife Management, Amherst, Mass.

Michigan State University, Department of Forestry, East Lansing, Mich.

University of Michigan, School of Natural Resources, Ann Arbor, Mich.

University of Minnesota, School of Forestry, St. Paul 1, Minn.

University of Missouri, Department of Forestry, Columbia, Mo.

Montana State University, School of Forestry, Missoula, Mont.

State University of New York, College of Forestry, Syracuse 10, N. Y.

North Carolina State College, School of Forestry, Raleigh, N. C.

Oregon State College, School of Forestry, Corvallis, Ore.

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School of Forestry, University Park, Pa.

Purdue University, Department of Forestry, Lafayette, Ind.

Utah State Agricultural College, School of Forestry, Range and Wildlife Management, Logan, Utah.

University of Washington, College of Forestry, Seattle 5, Wash.

West Virginia University, Division of Forestry, Morgantown, W. Va.

Yale University, School of Forestry, New Haven 11, Conn.

Not Accredited

The following institutions offer professional and/or technical curricula in forestry, but do not meet the requirements for accreditation.

Arkansas Agricultural and Mechanical College, Department of Forestry, College Heights, Ark.

Stephen F. Austin State College, Department of Forestry, Nacogdoches, Tex.

University of Connecticut, Department of Forestry and Wildlife Management, Storrs, Conn.

Harvard University, Harvard Forest, Petersham, Mass.

McNeese State College, Department of Agriculture, Lake Charles, La.

Michigan College of Mining and Technology, Department of Forestry, Houghton, Mich.

Mississippi State College, Department of Forestry, State College, Miss.

University of New Hampshire, Department of Forestry, Durham, N. H.

Oklahoma Agricultural and Mechanical College, Department of Forestry, Stillwater, Okla.

University of the South, Forestry Department, Sewanee, Tenn.

Virginia Polytechnic Institute, Department of Biology, Blacksburg, Va.

State College of Washington, Department of Forestry and Range Management, Pullman, Wash.

Introductory, Preforestry, and Specialized Courses

Abraham Baldwin Agricultural College, Tifton, Ga.

University of Arkansas, Department of Horticulture, Fayetteville, Ark.

Centenary College of Louisiana, Department of Biology, Shreveport, La.

Clemson Agricultural College, School of Agriculture, Clemson, S. C.

Cornell University, Department of Conservation, Ithaca, N. Y.

Grand Rapids Junior College, Grand Rapids, Mich.

Humboldt State College, Forestry Department, Arcata, Calif.

Idaho State College, Pocatello, Idaho.

University of Illinois, Department of Forestry, Urbana, Ill.

University of Kentucky, Department of Horticulture, Lexington, Ky.

Lassen Junior College, Division of Vocational Forestry and Lumbering, Susanville, Calif.

Marlboro College, Marlboro, Vt.

University of Maryland, Department of Horticulture, College Park, Md.

North Dakota Agricultural College, Department of Horticulture and Forestry, Fargo, N. Dak.

North Dakota School of Forestry, Bottineau, N. Dak.

Northwestern State College, Agriculture Department, Natchitoches, La.

Ohio State University, Department of Horticulture and Forestry, Columbus 10, Ohio.

Paul Smith's College, Forestry Department, Paul Smiths, N. Y.

Pasadena City College, Pasadena 4, Calif.

Rutgers University, Department of Forestry, New Brunswick, N. J.

Southern Illinois University, Division of Rural Studies, Carbondale, Ill.

University of Tennessee, Department of Horticulture and Forestry, Knoxville 16, Tenn.

Texas A & M College, Department of Range and Forestry, College Station, Texas.

University of Vermont, College of Agriculture, Burlington, Vt.

University of Virginia, School of Forestry, Charlottesville, Va.

Wisconsin State College, Botany Department, Superior, Wis.

University of Wisconsin, College of Agriculture, Madison, Wis.

Ranger Schools

State Forest Ranger School of the University of Florida, Lake City, Fla.

State Ranger School of State University College of Forestry, Wanakena, N. Y.

What Are The Personal Qualifications?

Success in any honorable, rewarding walk of life requires honesty, industry, reliability, and courage. Along with these a forester needs above average intelligence, initiative, self-reliance, the ability to work well with other people and to persuade them to his way of thought, scientific curiosity, good health, a strong constitution, and a genuine liking for the out of doors. The forester must be willing and able to spend extended periods in vigorous physical activity and to undergo, when necessary, actual physical hardship. Both he and his family should be prepared if necessary to live in isolated locations or in

small rural communities adjacent to forested areas and to do without many of the pleasures and advantages of urban existence. On the other hand, following a few years of field experience, present opportunities for competent foresters generally make it possible to seek the type of family environment desired. Many foresters, however, consider rural living to be one of the rewards of their work.

What Opportunities Are There?

In 1900 there were but a handful of trained foresters in the United States, while in 1956 an estimated 17,000 were engaged in forestry and closely allied fields. Further growth may be indicated by the fact that there currently exists a shortage to fill the demand. (There is a growing shortage in the United States of specialized and scientific personnel of all kinds.)

It is expected that in the future, barring economic upsets, the industries dependent upon forests for raw material will continue to expand and intensify their forestry activities. The management of publicly owned forests is also expected to intensify as an increasing population continues its demands for forest crops and its needs for forest services. New uses for wood and wood fiber may be expected to develop through scientific research. There is every reason to believe that there will be a continued and increasing demand for trained foresters.

The chances of finding a job are excellent in either industrial or public employ. The chances of finding a job that suits abilities and satisfies ambitions are also excellent, for the diversified nature of forestry work offers a rather wide degree of selectivity in fields of specialization.

What Rewards Can Be Expected?

In considering a career different people lay emphasis upon different aspects of what they hope to "get out of it." Nevertheless in any type of work one is interested in (1) an income sufficient to support himself and family and a chance for advancement in relation to abilities; (2) personal satisfaction in the work; (3) a feeling that the work is important to society; and (4) an opportunity to develop the use of personal abilities to the fullest extent possible. What does a career as a professional forester offer?

Income.—As previously indicated, foresters would be considered as in the middle income brackets. It is sufficient to say here that salaries are adequate in general and that due to a shortage of trained personnel there is a trend toward increases at all levels, which may be expected to continue.

Personal satisfaction.—Forestry offers a peculiarly stimulating combination of intellectual and physical endeavor that is very rewarding to those of suitable inclinations. It offers a clean, vigorous, healthful way of life both mentally and physically.

One source of personal satisfaction is a difficult one to define except for those who through experience can appreciate the joy of working with growing things. A plantation of trees established on an eroded field, healing the scars of abuse, a hillside green this summer because you extinguished a fire that threatened it last spring, a stand of timber properly cut for its products and leaving a thrifty growing stand to follow—what is the satisfaction? Nothing perhaps that puts more money in your bank account or has you nominated as a national hero. But something which makes you feel with pride that the land is better because you were there.

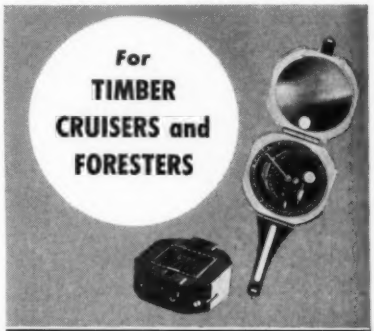
Foresters often have considerable opportunity to travel, to work in different parts of the country, or even the world. They come in contact with a wide variety of people in the normal course of their work—loggers, city picnickers, lawmakers, public officials, farmers, Boy Scouts, hunters, fishermen, business men and ranchers.

There is a strong sense of comradeship among members of the profession that is a source of continual pleasure.

Perhaps the most intangible personal reward available to a forester has little significance except to those of a philosophical turn of mind. To some, however, it can be very important. A forester has much contact with the out of doors and the forces of nature. He possesses scientific training to observe and understand, within the limits of scientific knowledge, what he sees. This can be a source of continual pleasure and interest. It fosters an appreciation of the interdependency of living things and of the very marvel of life itself. It is not without its influence on the way a man thinks or the values to which he attaches importance.

All in all, it can be said that forestry offers a well rounded, diversified, and interesting type of work that is a source of great satisfaction to the men who by their aptitudes and capabilities are suited to it.

Opportunity for personal development.—Forestry is a growing profession that is expanding its responsibilities in widening fields of activity in industry and government. Foresters find that their training and the diversity of the work of forestry offer almost unlimited opportunity to make use of special personal abilities and talents. They find job openings in excess of the number of trained men. It



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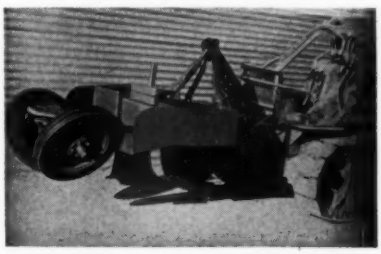

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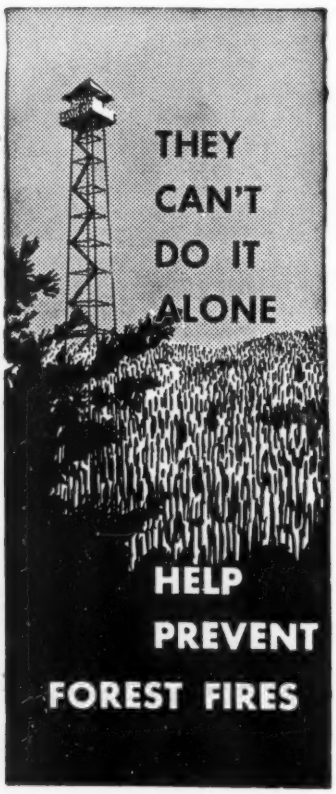

can be said almost without reservation that your opportunity for personal development as a forester would be entirely up to you.

Social significance.—The profession of forestry is primarily concerned with the wise use and conservation of one of our country's most important possessions—forests and forests lands and their related resources. Whether the forester works for a public agency, for industry, or for himself the practice of forestry is directed toward making those resources continually productive for the direct and indirect benefit of individuals, industries, and the general public.

The Big Step

(*From page* 20)

Everybody puts on his helmet for the take-off, and as soon as the plane slips sideways—you know you're off then—the helmets start coming off. A couple guys hoot and holler on the take-off, but not everyone. That's the difference between the Doug and the Ford. Everybody bellers when the Ford takes off. But you're not in the Ford and anyway, it really doesn't make much difference.

All the helmets are off now. Your eyes droop a little — the sweat on your face has dried, and you feel a bit sleepy. But you keep your peepers open, all right. You wouldn't want to wake up and wonder where you were and then all of a sudden find out. You ask yourself that question again and still can't figure what you're doing in an airplane you don't plan to come back in.

That makes you think about this business some more. Fire control—detection, presuppression, prevention, suppression—all that stuff you learned in school boils down to a simple fact: the fires gotta be put out and it costs a jug-full of money. Why, the chutes cost 250 bucks apiece, somebody said, and airplane rental comes to about $100 an hour. And all that cargo the guys are sitting on—tools that get dull or break, paper sleeping bags you throw away, grub, water, flashlights, compasses, maps—it all adds up to an awful lot of cash. But you decide that it's worth it—burned-up timber can cost money, too.

You look out the door and watch the ground rise and fall, and you know the plane is flying level. Awful lot of mountains down there. You notice a patch of snags. That's what fire does, you think, but no—there's not enough stuff on the ground. And the patch is reddish-brown. Bark beetles maybe? Or budworms? Hard to tell—

But the vibration of the plane brings you back, giving you a small sense of security, and you feel what the physics prof said about air being a fluid, just like water, but less dense.

You visualize the props taking bites of air and spitting them out behind, and now and then the plane bumps and soon the whim-whams go away for a while. You start thinking about that snag patch again. You don't know exactly what killed those trees, or even how big the area was. But what difference does it make whether it was budworms, borers, or bark beetles? That stuff was just as dead as if there had been a jackpot fire down there.

But pretty soon the prop has taken enough bites. Someone says, "There she is—wow! Overtime today, boys!" and your stomach gets at it again.

The pilot sets her up on one wing and the spotter goes to work looking for a jump-spot. Wearing goggles, he sticks his head out the door, looking. The plane goes around and around and around. One of the guys grabs his mouth and his buddy hollers for a burp-cup. The chatter quiets down now. Around again. The spotter pulls the small canopy out of a drift-chutes can and wraps it around the outside. He seems awfully damned matter-of-fact about it all. The plane levels out, controlled now by the spotter with his three flashing lights telling the pilot what to do. He chunks the drift-chute out, looks at his watch, and his eyes follow the drift-chute down.

The plane circles again. The guys start putting on their helmets. The assistant spotter checks over everyone's equipment. Another drift-chute or two. The helmet grinds your chin and you wish to hell you'd shaved that morning. The more you wiggle, the more your whiskers get shoved back in. You feel a trickle of sweat run down your chest and you think how the waist of your shorts must be dripping by now, soaking up all those trickles.

The spotter has the wind figured, and the first three guys stand up, hook up, squirming around working the leg straps up from behind their knees. They move toward the door.

(*Turn to page* 71)

by James B. Craig

"SCARE THE DAYLIGHTS OUT OF THEM," Senator Hubert Humhrey, of Minnesota, exhorted the Washington section of the Society of American Foresters last month in an address on "Forest Policy." The people of the country do not associate forest fires with renewable natural resources and it will require some hard-hitting tactics to reverse that situation. Senator Humphrey also attacked the Scrooge-like tactics of our legislative bodies as regards appropriations for fire control. "They'll shell it out for flood control but take another look at a fire appropriation," he said.

THE SENATOR TOLD THE FORESTERS he did not believe the Administration is calling for sufficient appropriations for public forestry. In view of the profits from the national forests, this is a case of spending money to make money, he said. Foresters need to convince legislators that certain minimum requirements are necessary as an investment for forestry work, he stressed. To end duplication of activity and waste, he urged a greater consolidation of government resources activities along the lines recommended by the Hoover Commission. Some adjustments will be necessary in the present land ownership pattern, in the Senator's judgment that would improve somewhat on the present land for land exchanges. He also urged more forestry personnel on the public forests, more access roads to obtain a full cut of timber under sustained yield practices.

AS REGARDS THE WILDERNESS BILL HE IS ESPOUSING, Senator Humphrey said he was being guided by the Wilderness Society and representatives of several other allied groups. He stressed that he was not saying that his bill should be enacted as presently written and that perhaps it should be changed but he is demanding that the issue be debated and that the public be fully acquainted with all the facts in the case. Senator Humphrey also served notice on the timber interests that he has "fighting clothes on" as regards his bill calling for a uniform price-reporting service on timber. Twice his bill has been blocked due to "outside pressures," he said. "Apparently they don't want the little farmer to know what is going on," he charged.

THE BOARD OF DIRECTORS OF AFA last month put its stamp of approval on the Eisenhower budget for public forests for 1958. It represents an increase of over 24 million dollars. Prior to the board meeting Forest Service Chief R. E. McArdle told President Don P. Johnston this is one of the best budgets in history from the standpoint of being closely integrated. Among other things, it recognizes the importance of holding on to young personnel the department is now succeeding in attracting, will improve poor housing conditions, and in general points to the production of more timber. Receipts from national forests in 1958—all made possible by a willingness to spend money to make money—will probably top 156 million dollars as compared to an anticipated $123 million in 1957, the chief said. One increase was urged by AFA's board in approving the budget—an additional $500,000 for forest fire research.

NOT ONE SINGLE COMPLAINT HAS BEEN RECEIVED by either the Forest Service of the Department of Agriculture or the Bureau of Land Management of the Department of Interior on the carrying out of the provisions of Public Law 167, the land reform act to clear up the status of mining claims on public lands. This amazing record was announced last month by bureau officials at a House hearing to inquire into progress under the act. Over 25 million acres have already been processed under Section 5 of the act. Previously Congressman Clair Engle, of California, had

(Turn to next page)

expressed the fear that activation of the law might be turning into a "dragnet" with "everyone swept into it." Congressman Saylor, of Pennsylvania, on the other hand, said that the BLM and the Forest Service "is doing exactly what the law intended them to do and as this committee intended." Saylor added that the mechanics set up under the law represented the only way by which fraudulent and invalid mining claims can be eliminated. No witnesses were called other than those from the two bureaus. After two days, hearings were adjourned.

PAPER WEEK LAST MONTH IN NEW YORK found some businessmen unhappy about the subsidy aspects of the Soil Bank Program which AFA has been promoting. They agree that the idea of reducing huge overall agricultural surpluses is good and that the Soil Bank can help to do this. But they still do not like the subsidy idea in the tree-growing field, and they hope the government gets out of it as soon as possible. Into this breech stepped William Swingler, assistant chief of the Forest Service, whose assignment was to explain the new program. After repeating five times that the "purpose of the Soil Bank is to reduce surpluses, not to plant trees," Swingler switched to movies taken a few days before showing seedlings going into the ground a mile a minute on a Georgia farm—a sight it might be added that never fails to please forestry-minded members of APA. This particular planting, Swingler explained, showed one of the first Soil Bank approved projects going into action. Next came a salty skit live from New York featuring a farmer being interviewed by H. O. Nichols, Soil Bank specialist with the Federal Agricultural Stabilization and Conservation Committee, of Syracuse. Finally, Swingler's ringing sincerity in stressing the importance of reducing agricultural surpluses was impressive. Consensus: Swingler did a good job but as one delegate asked, "How long has it (the Soil Bank) gotta last?" Much more to the members' liking were skits put on by AFPI and the Southern Pulpwood Conservation Association explaining the opportunities of tree farming. Members in the audience nodded approval as AFPI'S Forester Jim McClellan, one of the actors in the skit, told "Farmer Jones," "The only incentive I've got is cash for cash crops."

WHILE FORESTER SWINGLER REPORTED MUCH SOIL BANK ACTIVITY in the South and Lake States the same is not true in Iowa, Carl Langenbach, of the Crandon Paper Mills Co., reported. Farmers show scant interest in tree growing out there, Langenbach said. "We don't much care where the wood comes from as long as we get it." To help the cause along his firm set up a price differential system whereby owners selling wood to the company from well-managed land are paid more money per ton than wood from poorly or badly managed land. "We don't intend to retreat from this stand," Langenbach said. "And we're finding that the system is creating quite a lot of comment."

IT WAS A MIGHTY SOMBER PROGRAM THAT APA PUT ON THE FOLLOWING DAY when Louis Levine, of the Department of Labor, Merle S. Lowden, Forest Service, and William E. Haines, Department of Commerce, discussed "Industrial Defense and Pulpwood Production." In developing a proper posture of readiness in case of atomic attack,these experts urged that every firm should "leave a legacy for the future" for those that might be left including all pertinent records, an inventory of production equipment, a record of employees, and a record of shareholders. All this to be buried in caves, mines and other suitable undercover areas. A real effort should be made to take care of top management and technical people, these experts stressed. When the experts said they were not sure that Forest Fire Compact setups would help greatly in setting up the defense posture, most of the listeners decided that the caves in which the legacies are left should be mighty deep ones.

THE RESIGNATION OF JOHN L. FARLEY, DIRECTOR OF THE U. S. FISH AND WILDLIFE SERVICE last month marks the departure of another Interior agency chief of the Douglas McKay team. Farley has been offered a non-policy-making position with the service. While Farley had a good record as head of the wildlife agency, he was constantly under fire because he had been a "political" appointee rather than a federal career man, although he had been executive director of the California Fish and Game Commission. Under Interior Department's reorganization of the Fish and Wildlife Service, Ross L. Leffler has been named to a new post: Assistant Secretary for Fish and Wildlife (see AMERICAN FORESTS, February 1957). The law also established a Commissioner of Fish and Wildlife. It is expected that the new Commissioner will be Arnie J. Soumela, now acting director of the new Bureau of Commercial Fisheries, and formerly Director of Fisheries for Oregon. Director of the Bureau of Sport Fisheries and Wildlife will be Daniel H. Jantzen, now regional chief for the service at Minneapolis. New chief of the Bureau of Commercial Fisheries will be Donald L. McKerman, now head of Alaska Fisheries.

The Big Step

(*From page* 68)

The spotter unhooks the door strap. Everything's ready.

You're in the next stick, in the middle. Your buddy ahead of you likes to go first, and though you say it really doesn't make any difference to you, you'd just as soon let him for some reason or another. The jumper behind you is another buddy, and it makes you feel good to know he's there, too. Jumping second-man is comfortable, somehow, sort of friendly. You unhitch your static line from your chestpack and hook it to the cable that runs from the ceiling to the floor by the doorway. The assistant spotter shoves in the cotter-pin, safetying your static line, and you give it a couple of tugs, not because you don't have absolute faith in the thing, but just because you think it's the thing to do.

Your teeth are clamped so tight your jaw aches, but you don't ease up. You concentrate on the hurt in your face, squinting out the door, down, and then look intensely at the back of your buddy's helmet. You watch that for a while. Then looking at the spotter, you see him stretched on the floor, carefully out of the way, working, working, working—he's sweating, too, watching, deciding, calculating. You move your feet around a bit, figuring—one step to the door, right leg out first, right leg forward now.

It's probably about two seconds to go when everything seems all right, after all. You hear the engines pop because you've been listening for 'em, you hear the spotter yell, "Get outa here!", you see the first man just plain disappear, you smell the hot-oil odor from the engine, you hear just a faint whistling noise, your mind is somewhere else. All you see is a small spot, two or three trees, maybe. But you can count every needle on them a thousand feet down there.

Every muscle is as tight as you can get it, and then you can't see anything but black. You feel like you're a bedroom slipper and there's a great big dog just shaking the daylights out of you.

You look up and check your canopy, just the way you'd been taught, but you don't look at it as long as you always think you will before you jump. Mostly just long enough to see that it's there, because you're rather anxious to find a place to land. You give a quick look down, then back up again to find the guidelines. You grab one in each hand.

You feel good. You holler at the other guys. They holler back. But you're getting down now, and you get busy.

Too late to swing around the snag, you slam into it and get the bedroom slipper feeling again. You can't for the world figure out which way up is, and among all the noise of tumbling down through the branches and brush, you thump into the ground and flop into a perfect roll.

You lie there and shake it off for a minute, then pull off your helmet to let the whiskers loose, and look up in time to see another bunch of guys taking the long step.

So you lay back and pull your cigarettes out of the helmet, above the canvas head-band, light up, and figure, "Oh hell, it was fun."

But right now, you've gotta get busy with the immediate job. You scrape a bare spot, crush out the smoke, get out of your jump-suit. And then you walk up the hill to the fire.

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There are many members and friends of the Association who find it impractical to contribute to its educational activities during their lifetime. Gifts in the form of a bequest are welcomed. Officers of the Association will gladly consult at any time with those who wish to know more about designating gifts for educational work in forest conservation.

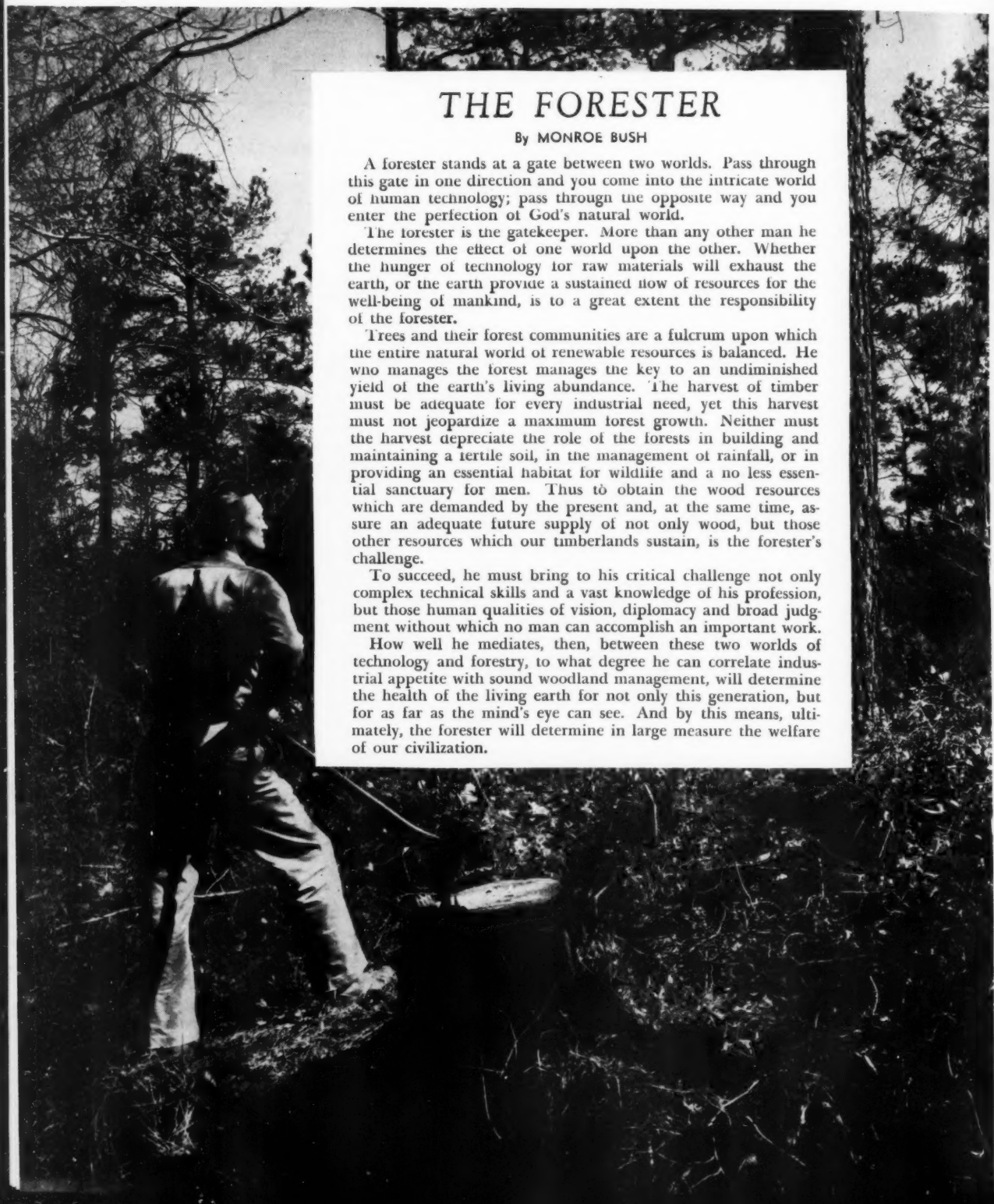
Following is a paragraph suitable for incorporation in wills:

"I hereby give, devise and bequeath ..... to The American Forestry Association, Washington, D. C., a non-profit District of Columbia corporation, or its successor, or successors, for the purpose of promoting the corporate activities of said Association."

THE AMERICAN FORESTRY ASSOCIATION
919 Seventeenth Street, N. W. Washington 6, D. C.

Feature Photo of the Month

Photos used on this page will be of unusual rather than esthetic qualities and subject matter will be restricted to scenes, events, objects or persons related to the use, enjoyment or unique aspects of our renewable natural resources. For each picture selected AMERICAN FORESTS *will pay $10*



THE FORESTER

By MONROE BUSH

A forester stands at a gate between two worlds. Pass through this gate in one direction and you come into the intricate world of human technology; pass through the opposite way and you enter the perfection of God's natural world.

The forester is the gatekeeper. More than any other man he determines the effect of one world upon the other. Whether the hunger of technology for raw materials will exhaust the earth, or the earth provide a sustained flow of resources for the well-being of mankind, is to a great extent the responsibility of the forester.

Trees and their forest communities are a fulcrum upon which the entire natural world of renewable resources is balanced. He who manages the forest manages the key to an undiminished yield of the earth's living abundance. The harvest of timber must be adequate for every industrial need, yet this harvest must not jeopardize a maximum forest growth. Neither must the harvest depreciate the role of the forests in building and maintaining a fertile soil, in the management of rainfall, or in providing an essential habitat for wildlife and a no less essential sanctuary for men. Thus to obtain the wood resources which are demanded by the present and, at the same time, assure an adequate future supply of not only wood, but those other resources which our timberlands sustain, is the forester's challenge.

To succeed, he must bring to his critical challenge not only complex technical skills and a vast knowledge of his profession, but those human qualities of vision, diplomacy and broad judgment without which no man can accomplish an important work.

How well he mediates, then, between these two worlds of technology and forestry, to what degree he can correlate industrial appetite with sound woodland management, will determine the health of the living earth for not only this generation, but for as far as the mind's eye can see. And by this means, ultimately, the forester will determine in large measure the welfare of our civilization.

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